ACME

BRICK COMPANY

ABC

Highest Grade
Refractory Products

REFRACTORY MANUAL

Catalog

CONTAINING VALUABLE INFORMATION

CONCERNING THE USE OF

Fireclay Brick

as manufactured by

ACME BRICK COMPANY

Plant: Perla, Arkansas

P. O. Malvern, Ark.

General Office: Fort Worth, Texas, U. S. A.

Sales Offices and Dealers
in Principal Cities

ISSUED JULY, 1936

Approved by

AMERICAN REFRACTORIES INSTITUTE

with revisions to date

Registered—U. S. Patent Office

Acme LA PERLA Brand

A VERY carefully processed first quality fire brick, manufactured under scientific plant and laboratory control for the most exacting and severest furnace requirements. Acme 'LaPerla' fire brick are built to a rigid specification. Careful selection of clays, perfect sizing of grains, scientific burning and constant inspection by competent ceramic engineers, insure its high quality and uniformity.

Acme 'LaPerla' fire brick successfully pass the severe test requirements under A. S. T. M. Specification C64-34T for Zone of highest temperature; also pass Federal Specification HH-B-671a highest class (SH-75) for use under the most severe conditions of boiler practice. The fusion point is Cone 32-33. Acme 'LaPerla' brick have an exceptionally good spalling test, making them an ideal brick for furnaces where fluctuating temperatures are encountered.

These high grade brick are manufactured by the dry press process. They are very uniform in size and shape, thus giving the close, tight masonry joints so necessary for better furnace construction. This means lower costs—greater efficiency of furnace operation.

There's an Acme representative near you—try 'LaPerla' brand on your next work, and lay them in 'Everset'. You'll be pleased.

Established 1891—45 Years

Registered—U. S. Patent Office

Acme EVERLAST Brand

Acme 'Everlast' is an intermediate grade refractory, far better than most brick of this class. Made from one of the highest grade plastic clays known, it is a close second to 'LaPerla' brand. The same high grade supervision and workmanship used in making our higher priced brand is also used for 'Everlast' brand. It easily passes A. S. T. M. specification C64-34T for moderate heat duty requirements and is accepted under Federal Specification HH-B-671a for class M-73 or H-75.

Acme 'Everlast' is manufactured by the dry press method. Exceptionally uniform in size and shape, this brand is satisfactory for all but the most severe furnace conditions.

ELGIN STANDARD (Texas) BRAND

For many years this fine 'Texas' grade has given good service. It is recommended for general fire brick work, such as lining flues and chimneys, second pass boiler work, oil stills, bake ovens, etc. Manufactured by dry press method; high salvage value; a good, hard, durable second quality brick. Made at Elgin, Texas.

Acme EVERSET

High Temperature Mortar

Acme 'Everset' is a first-class, air-setting, high temperature bonding mortar, ideal for laying high grade fire brick. It has a high fusion point, practically no shrinkage, and possesses that smooth working quality so desirable in high temperature cement. It sets up a firm bond at atmospheric temperature, which matures under firing, making the joint stronger than the brick, thus giving a gas tight monolithic wall.

Masons like Acme 'Everset' because when mixed with water it remains in suspension and does not settle. This guarantees uniformity of joints and thus better service.

Acme 'Everset' is also a valuable aid to furnace economy as a spray mixed with ground fire brick (grog) and applied with brush or spray gun to thickness of about 1/16" to 1/8". Mixed with coarse grog it is fine for monolithic baffles, or as a patching material. Acme 'Everset' comes in paste form. It is packed in air-tight drums of 500, 200, 100, and 35 pounds each.

Acme HEAT-SET

Acme 'Heat-Set' is a dry, heat setting mortar packed in 100-pound paper sacks. This high temperature mortar must be mixed with water to the proper consistency before using. The bond sets up when furnace temperature is reached.

Acme EVERLASTIC

Acme 'Everlastic' is plastic fire brick in moldable form. It is made from first quality fire clay materials and packed in 250 and 500 pound air tight metal drums, ready for use.

Scientifically balanced to minimize burning shrinkage, Acme 'Everlastic' builds gas tight walls, thus increasing furnace efficiency. An excellent product for entire furnace linings, as well as patching material. It is molded into place by pounding with a mallet, is then dried out with a slow fire, gradually increasing until the furnace lining is matured. Thus Acme 'Everlastic' becomes a finished monolithic lining of the best quality.

This product is unexcelled as a handy, quick patching material. Every furnace operator should carry a small supply ready for use.

Acme FIRE CLAYS

In addition to our high grade manufactured fire clay products, we ship many cars each year of various types of clays. We ship clays in crude lump form, milled (bulk or in sacks), or calcined. Various users are foundries, zinc smelters and potteries.

We have an exceptionally fine-grained clay, almost entirely free of iron, and other impurities. It is extremely plastic and smooth working: excellent for laying high grade fire brick.

Acme REFRACT-O-CRETE

Acme 'Refract-O-Crete' is a castable material in dry form, shipped in 100-pound paper bags, to be used for pouring baffles, making special shapes, burner ports, etc. It must be kept dry until used.

GUARANTEES

No performance guarantee of any kind is made in the sale of refractories.

In the execution of orders for his products the manufacturer undertakes to furnish material which in his judgment is best suited for the purpose for which it is purchased.

Having thus met the full sense of the obligation to the industries he serves and having no control over the use of his product after it is placed in service, the manufacturer believes that there is a similar obligation on the part of the purchaser to seek and select the material which will give him the best results and to exercise extreme care and discretion in the use of the material which he receives.

SIZE DEVIATIONS

Variations of 2% (plus or minus) from specified dimensions due to either variation in shrinkage or warpage or both shall be allowed on dimensions of 4″ or over, and of 3% (plus or minus) on dimensions under 4″.

OVERSHIPMENTS

The following overages shall be allowable on all shipments of shapes that are not standard:

QUANTITY SPECIFIED	OVERAGES
1— 10	1 Shape*
11— 100	10%
101— 250	7%
251— 750	5%
751— 1500	4%
1501— 5000	3%
5001—10000	2%
Over 10000	1%

*If in sets, 1 complete set.

GENERAL INFORMATION ABOUT FIRE BRICK

Fire brick should be stored in a dry place, especially in cold weather, to prevent deterioration by the action of moisture. Brick which have not received care during storage cannot be expected to give the best results in service.

Finely ground fire clay should be used for laying fireclay brick. For high temperature service the fire clay should have a P.C.E. two to three cones lower than the P.C.E. of the brick, but no more.

Mix the fire clay with water to form a thin paste. Dip the brick and rub them in place to make brick to brick joints.

Warm the brickwork slowly to expel moisture.

From 300 to 450 pounds of fire clay is a sufficient quantity to lay 1000 standard 9-inch brick ($9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ inches).

In vulnerable parts of furnaces the use of high temperature bonding mortar in place of fire clay is often advantageous.

For estimating brickwork constructed with standard 9-inch brick ($9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ inches), use the following figures, which are net amounts. Add a small percentage to take care of breakage and cutting.

1 square foot of wall, $4\frac{1}{2}$ inches thick, requires 6.4 nine-inch straight brick.

1 square foot of wall, 9 inches thick, requires 12.8 nine-inch straight brick.

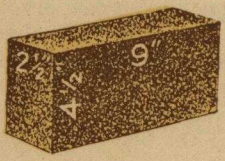
1 square foot of wall, $13\frac{1}{2}$ inches thick, requires 19.2 nine-inch straight brick.

1 cubic foot of wall requires 17.1 brick.

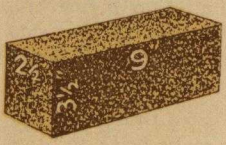
1 cubic foot of fireclay brick weighs 120–140 pounds.

1000 standard 9-inch brick ($9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ inches), have a volume of 58.6 cubic feet.

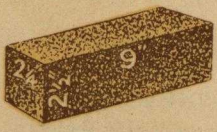
STANDARD 9 x 4½ x 2½-INCH SERIES



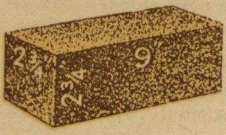
9" Straight—2½" Series
9"×4½"×2½"



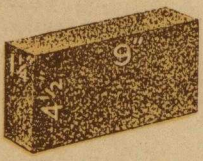
Small 9" Brick—2½" Series
9"×3½"×2½"



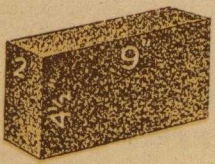
9" Soap—2½" Series
9"×2½"×2¼"



9" Checker—2½" Series
9"×2¾"×2¾"

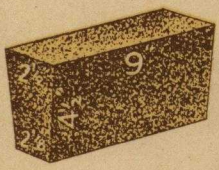


9" Split Brick—2½" Series
9"×4½"×1¼"

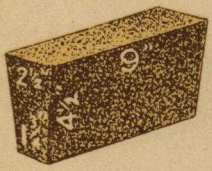


9"—2" Brick—2½" Series
9"×4½"×2"

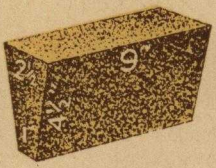
STANDARD 9 x 4½ x 2½-INCH SERIES



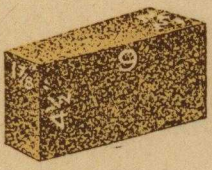
9″ No. 1 Arch—2½″ Series
9″×4½″×(2½″—2⅛″)



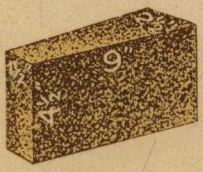
9″ No. 2 Arch—2½″ Series
9″×4½″×(2½″—1¾″)



9″ No. 3 Arch—2½″ Series
9″×4½″×(2½″—1″)

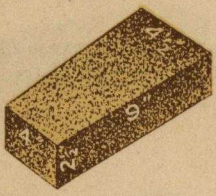


9″ No. 1 Wedge—2½″ Series
9″×4½″×(2½″—1⅞″)

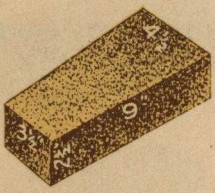


9″ No. 2 Wedge—2½″ Series
9″×4½″×(2½″—1½″)

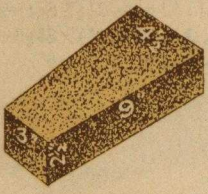
STANDARD 9 x 4½ x 2½-INCH SERIES



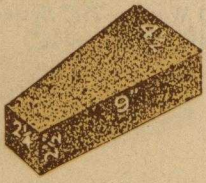
9″ No. 1 Key—2½″ Series
9″ × (4½″—4″) × 2½″



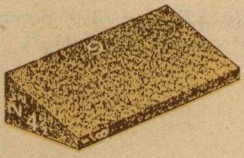
9″ No. 2 Key—2½″ Series
9″ × (4½″—3½″) × 2½″



9″ No. 3 Key—2½″ Series
9″ × (4½″—3″) × 2½″

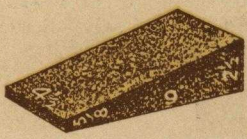


9″ No. 4 Key—2½″ Series
9″ × (4½″—2¼″) × 2½″

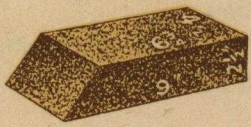


9″ Feather Edge—2½″ Series
9″ × 4½″ × (2½″—⅛″)

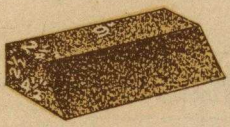
STANDARD 9 x 4½ x 2½-INCH SERIES



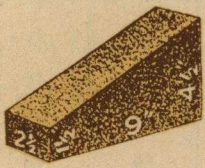
9″ Neck Brick—2½″ Series
9″×4½″×(2½″—⅝″)



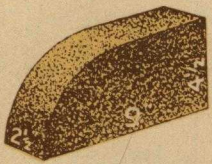
9″ End Skew—2½″ Series
(9″—6¾″)×4½″×2½″



9″ Side Skew—2½″ Series
9″×(4½″—2¼″)×2½″

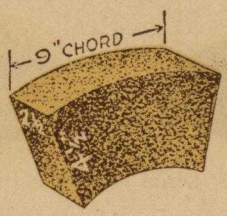


9″ Edge Skew—2½″ Series
9″×(4½″—1½″)×2½″



9″ Jamb Brick—2½″ Series
9″×4½″×2½″

STANDARD 9 x 4½ x 2½-INCH SERIES



9″ Circle Brick

Dimensions of all Circle Brick

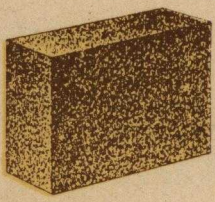
Outside Chord.....9 inches
Radial Dimension.....4½ inches
Thickness.....2½ inches

Brick number	Inside chord in inches	Diameter in inches		Number of brick to circle
		Inside	Outside	
24–33	6 17/32	24	33	12
36–45	7 3/16	36	45	16
48–57	7 19/32	48	57	20
60–69	7 13/16	60	69	24
72–81	8	72	81	29
84–93	8 1/8	84	93	33
96–105	8 7/32	96	105	37
108–117	8 5/16	108	117	41
120–129	8 3/8	120	129	45

STANDARD 9 x 4½ x 3-INCH SERIES

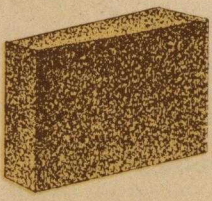
Name of Brick	Dimensions
9″ Straight—3″ Series	9″×4½″×3″
Small 9″ Brick—3″ Series	9″×3½″×3″
9″ Soap—3″ Series	9″×3″×2¼″
9″ Split Brick—3″ Series	9″×4½″×1½″
9″ No. 1 Arch—3″ Series	9″×4½″×(3″—2¾″)
9″ No. 2 Arch—3″ Series	9″×4½″×(3″—2½″)
9″ No. 3 Arch—3″ Series	9″×4½″×(3″—2″)
9″ No. 1 Wedge—3″ Series	9″×4½″×(3″—2¾″)
9″ No. 2 Wedge—3″ Series	9″×4½″×(3″—2½″)
9″ No. 3 Wedge—3″ Series	9″×4½″×(3″—2″)
9″ No. 1 Key—3″ Series	9″×(4½″—4″)×3″
9″ No. 2 Key—3″ Series	9″×(4½″—3½″)×3″
9″ No. 3 Key—3″ Series	9″×(4½″—3″)×3″
9″ No. 4 Key—3″ Series	9″×(4½″—2¼″)×3″
9″ Feather Edge—3″ Series	9″×4½″×(3″—⅛″)
9″ Neck Brick—3″ Series	9″×4½″×(3″—⅝″)
9″ End Skew—3″ Series	(9″—6⁵⁄₁₆″)×4½″×3″
9″ No. 1 Side Skew—3″ Series	9″×(4½″—2¹¹⁄₁₆″)×3″
9″ No. 2 Side Skew—3″ Series	9″×(4½″—1¹³⁄₁₆″)×3″

OTHER STANDARD SIZES



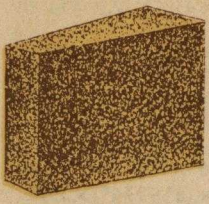
Large 9″ Straight—2½″ Series
9″×6¾″×2½″

Large 9″ Straight—3″ Series
9″×6¾″×3″



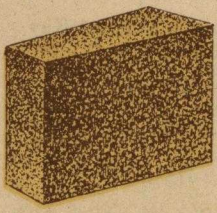
Large 9″ No. 1 Wedge—2½″ Series
9″×6¾″×(2½″—1⅞″)

Large 9″ No. 1 Wedge—3″ Series
9″×6¾″×(3″—2¾″)

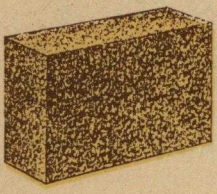


Large 9″ No. 2 Wedge—2½″ Series
9″×6¾″×(2½″—1½″)

Large 9″ No. 2 Wedge—3″ Series
9″×6¾″×(3″—2½″)



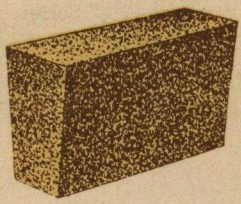
Large 9″ No. 3 Wedge
9″×6¾″×(3″—2″)



Flat Back Straight
9″×6″×2½″

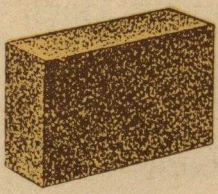
Flat Back Split
9″×6″×1¼″

OTHER STANDARD SIZES

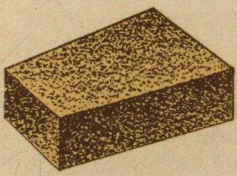


No. 1 Flat Back Arch
9″×6″×(3½″—2½″)

No. 2 Flat Back Arch
9″×6″×(3½″—2″)

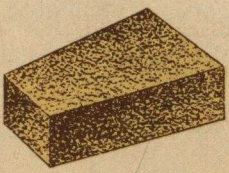


9″×6″×2½″ Straight
9″×6″×3″ Straight



9″×6″×2½″ No. 1 Key
9″×(6″—5⅜″)×2½″

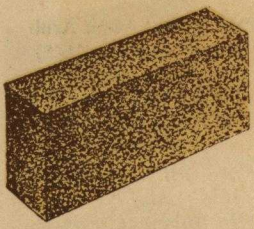
9″×6″×3″ No. 1 Key
9″×(6″—5⅜″)×3″



9″×6″×2½″ No. 2 Key
9″×(6″—4 13/16″)×2½″

9″×6″×3″ No. 2 Key
9″×(6″—4 13/16″)×3″

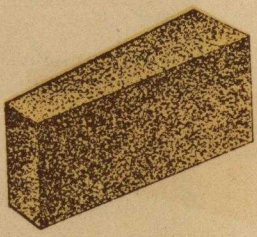
OTHER STANDARD SIZES



12″×6″×3″ Straight

13½″×6″×2½″ Straight

13½″×6″×3″ Straight



12″×6″×3″ No. 1 Wedge
12″×6″×(3″—2¾″)

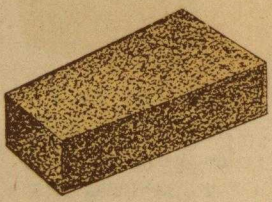
12″×6″×3″ No. 2 Wedge
12″×6″×(3″—2½″)

12″×6″×3″ No. 3 Wedge
12″×6″×(3″—2″)

13½″×6″×3″ No. 1 Wedge
13½″×6″×(3″—2¾″)

13½″×6″×3″ No. 2 Wedge
13½″×6″×(3″—2½″)

13½″×6″×3″ No. 3 Wedge
13½″×6″×(3″—2″)



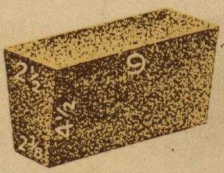
13½″×6″×2½″ No. 1 Key
13½″×(6″—5″)×2½″

13½″×6″×3″ No. 1 Key
13½″×(6″—5″)×3″

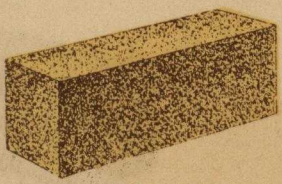
13½″×6″×2½″ No. 2 Key
13½″×(6″—4⅜″)×2½″

13½″×6″×3″ No. 2 Key
13½″×(6″—4⅜″)×3″

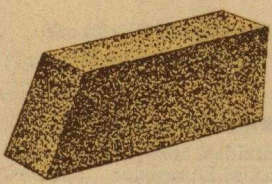
OTHER STANDARD SIZES



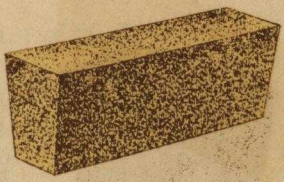
9″ Bung Arch
9″×4½″×(2½″—2⅜″)



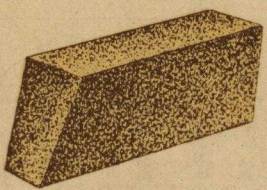
13½″ No. 101 Square Bung
13½″×4½″×3″
13″ No. 101 Square Bung
13″×4½″×3″
9″ No. 101 Square Bung
9″×4½″×3″



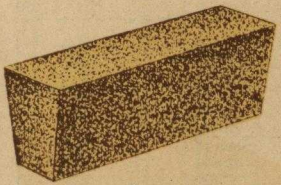
13½″ No. 102 Angle Bung
(13½″—12⅛″)×4½″×3″
13″ No. 102 Angle Bung
(12¾″—11⅜″)×4½″×3″



13½″ No. 103 Bung Arch
13½″×4½″×(3″—2⅝″)
13″ No. 103 Bung Arch
13″×4½″×(3″—2⅝″)

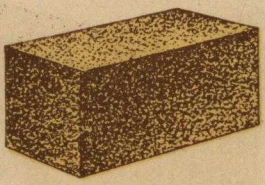


13½″ No. 104 Arch Angle Bung
(13½″—12⅛″)×4½″×
(3″—2⅝″)
13″ No. 104 Arch Angle Bung
(12¾″—11⅜″)×4½″×
(3″—2⅝″)



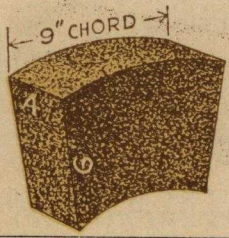
13½″ No. 105 Bung Arch
13½″×4½″×(3″—2⅞″)
13″ No. 105 Bung Arch
13″×4½″×(3″—2⅞″)
9″ No. 105 Bung Arch
9″×4½″×(3″—2⅞″)

OTHER STANDARD SIZES



Open Hearth Checker

9″×6″×3″
10½″×4½″×3″
10½″×4½″×4½″
13½″×4½″×3″
13½″×4½″×4½″
13½″×6″×2½″
13½″×6″×3″



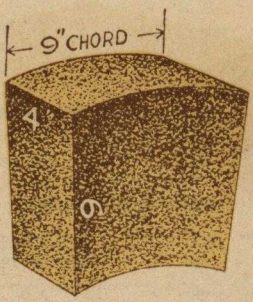
6″ Cupola Blocks and
6″ Rotary Kiln Blocks

Dimensions of all Blocks

Outside Chord.....9 inches
Radial Dimension..6 inches
Thickness.....4 inches

Block number	Inside chord in inches	Diameter in inches		Number of blocks to circle
		Inside	Outside	
30–42	6 1/16	30	42	15
36–48	6 3/4	36	48	17
42–54	7	42	54	19
48–60	7 3/16	48	60	21
54–66	7 3/8	54	66	23
60–72	7 1/2	60	72	26
66–78	7 5/8	66	78	28
72–84	7 23/32	72	84	30
78–90	7 15/16	78	90	32
84–96	7 7/8	84	96	34
90–102	7 15/16	90	102	36
96–108	8	96	108	38
102–114	8 1/16	102	114	40
108–120	8 3/32	108	120	42
114–126	8 3/32	114	126	44
120–132	8 3/16	120	132	46
123–135	8 3/16	123	135	48

OTHER STANDARD SIZES



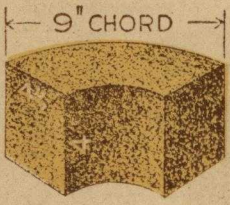
9″ Rotary Kiln Blocks

Dimensions of all Blocks

Outside Chord.....9 inches
Radial Dimension.....9 inches
Thickness.....4 inches

Block number	Inside chord in inches	Diameter in inches		Number of blocks to circle
		Inside	Outside	
48–66	$6\frac{17}{32}$	48	66	23
54–72	$6\frac{3}{4}$	54	72	26
60–78	$6\frac{15}{16}$	60	78	28
66–84	$7\frac{1}{16}$	66	84	30
72–90	$7\frac{3}{16}$	72	90	32
78–96	$7\frac{5}{16}$	78	96	34
84–102	$7\frac{13}{32}$	84	102	36
90–108	$7\frac{1}{2}$	90	108	38
96–114	$7\frac{19}{32}$	96	114	40
102–120	$7\frac{21}{32}$	102	120	42
108–126	$7\frac{23}{32}$	108	126	44
114–132	$7\frac{25}{32}$	114	132	46
117–135	$7\frac{13}{16}$	117	135	48
120–138	$7\frac{13}{16}$	120	138	49
123–141	$7\frac{27}{32}$	123	141	50
126–144	$7\frac{7}{8}$	126	144	51
132–150	$7\frac{29}{32}$	132	150	53
138–156	$7\frac{31}{32}$	138	156	55
144–162	8	144	162	57
150–168	$8\frac{1}{32}$	150	168	59

OTHER STANDARD SIZES

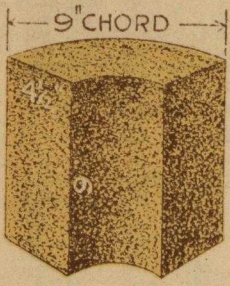


4½" Cupola Blocks

Dimensions of all Blocks

Outside Chord....9 inches
Radial Dimension 4½ inches
Height.....4 inches

Block number	Inside chord in inches	Diameter in inches		Number of blocks to circle
		Inside	Outside	
27-36	6¾	27	36	13
32-41	7 1/32	32	41	15



9" Cupola Blocks

Dimensions of all Blocks

Outside Chord....9 inches
Radial Dimension 4½ inches
Height.....9 inches

Name of block	Inside chord in inches	Diameter in inches		Number of blocks to circle
		Inside	Outside	
A	5¾	16	25	9
B	6 5/16	21	30	11
C	6¾	27	36	13
D	6 15/16	30	39	14
E	7 11/32	40	49	18
F	7 21/32	51	60	21
G	7 13/16	60	69	24
H	8	73	82	29

9 x 4½ x 2½-INCH ARCH BRICK

Inside diameter	Number required to turn circle				
	No. 3 Arch	No. 2 Arch	No. 1 Arch	Straight	Total
0′— 6″	19	..	..	...	19
1′— 0″	12	15	..	...	27
1′— 6″	4	30	..	...	34
1′— 9″	..	38	..	...	38
2′— 0″	..	34	8	...	42
2′— 6″	..	26	23	...	49
3′— 0″	..	19	38	...	57
3′— 6″	..	11	53	...	64
4′— 0″	..	4	68	...	72
4′— 3″	..	..	76	...	76
4′— 6″	..	..	76	4	80
5′— 0″	..	..	76	11	87
5′— 6″	..	..	76	19	95
6′— 0″	..	..	76	26	102
6′— 6″	..	..	76	34	110
7′— 0″	..	..	76	41	117
7′— 6″	..	..	76	49	125
8′— 0″	..	..	76	56	132
8′— 6″	..	..	76	64	140
9′— 0″	..	..	76	71	147
9′— 6″	..	..	76	79	155
10′— 0″	..	..	76	87	103
10′— 6″	..	..	76	94	170
11′— 0″	..	..	76	102	178
11′— 6″	..	..	76	109	185
12′— 0″	..	..	76	117	193
12′— 6″	..	..	76	124	200
13′— 0″	..	..	76	132	208
13′— 6″	..	..	76	139	215
14′— 0″	..	..	76	147	223
14′— 6″	..	..	76	154	230

9 x 4½ x 3-INCH ARCH BRICK

Inside diameter	Number required to turn circle				
	No. 3 Arch	No. 2 Arch	No. 1 Arch	Straight	Total
1′— 6″	29	..	..	...	29
2′— 0″	22	13	..	...	35
2′— 6″	16	25	..	...	41
3′— 0″	10	38	..	...	48
3′— 6″	3	51	..	...	54
3′— 9″	..	57	..	...	57
4′— 0″	..	54	6	...	60
4′— 6″	..	47	19	...	66
5′— 0″	..	41	32	...	73
5′— 6″	..	35	44	...	79
6′— 0″	..	28	57	...	85
6′— 6″	..	22	70	...	92
7′— 0″	..	16	82	...	98
7′— 6″	..	10	94	...	104
8′— 0″	..	3	107	...	110
8′— 3″	..	..	113	...	113
8′— 6″	..	..	113	4	117
9′— 0″	..	..	113	10	123

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

(Continued on next page)

9 x 4½ x 3-INCH ARCH BRICK (Concluded)

Inside diameter	Number required to turn circle				
	No. 3 Arch	No. 2 Arch	No. 1 Arch	Straight	Total
9′— 6″	..	..	113	16	129
10′— 0″	..	..	113	22	135
10′— 6″	..	..	113	29	142
11′— 0″	..	..	113	35	148
11′— 6″	..	..	113	41	154
12′— 0″	..	..	113	48	161
12′— 6″	..	..	113	54	167
13′— 0″	..	..	113	60	173
13′— 6″	..	..	113	66	179
14′— 0″	..	..	113	73	186
14′— 6″	..	..	113	79	192

*9 x 4½ x 2½-INCH WEDGE BRICK

Inside diameter	Number required to turn circle			
	No. 2 Wedge	No. 1 Wedge	Straight	Total
2′— 3″	57	..	...	57
2′— 6″	51	10	...	61
3′— 0″	38	30	...	68
3′— 6″	25	51	...	76
4′— 0″	13	71	...	83
4′— 6″	..	91	...	91
5′— 0″	..	91	7	98
5′— 6″	..	91	15	106
6′— 0″	..	91	22	113
6′— 6″	..	91	30	121
7′— 0″	..	91	38	129
7′— 6″	..	91	45	136
8′— 0″	..	91	53	144
8′— 6″	..	91	60	151
9′— 0″	..	91	68	159
9′— 6″	..	91	75	166
10′— 0″	..	91	83	174
10′— 6″	..	91	90	181
11′— 0″	..	91	98	189
11′— 6″	..	91	105	196
12′— 0″	..	91	113	204
12′— 6″	..	91	121	212
13′— 0″	..	91	128	219
13′— 6″	..	91	136	227
14′— 0″	..	91	143	234
14′— 6″	..	91	151	242
15′— 0″	..	91	158	249
15′— 6″	..	91	166	257
16′— 0″	..	91	173	264
16′— 6″	..	91	181	272
17′— 0″	..	91	188	279
17′— 6″	..	91	196	287
18′— 0″	..	91	203	294
18′— 6″	..	91	211	302
19′— 0″	..	91	219	310
19′— 6″	..	91	226	317

*Applies also to 9×6¾×2½-inch Wedges and Straights.

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

(Continued on next page)

*9 x 4½ x 2½-INCH WEDGE BRICK (Concluded)

Inside diameter	Number required to turn circle			
	No. 2 Wedge	No. 1 Wedge	Straight	Total
20′— 0″	..	91	234	325
20′— 6″	..	91	241	332
21′— 0″	..	91	249	340
21′— 6″	..	91	256	347
22′— 0″	..	91	264	355
22′— 6″	..	91	271	362
23′— 0″	..	91	279	370
23′— 6″	..	91	286	377
24′— 0″	..	91	294	385
24′— 6″	..	91	301	392
25′— 0″	..	91	309	400
25′— 6″	..	91	317	408
26′— 0″	..	91	324	415
26′— 6″	..	91	332	423
27′— 0″	..	91	339	430
27′— 6″	..	91	347	438

*Applies also to 9×6¾×2½-inch Wedges and Straights.

*9 x 4½ x 3-INCH WEDGE BRICK

Inside diameter	Number required to turn circle				
	No. 3 Wedge	No. 2 Wedge	No. 1 Wedge	Straight	Total
3′— 0″	57	...	...	..	57
3′— 6″	50	13	...	..	63
4′— 0″	44	26	...	..	70
4′— 6″	38	38	...	..	76
5′— 0″	32	50	...	..	82
5′— 6″	25	63	...	..	88
6′— 0″	19	76	...	..	95
6′— 6″	13	88	...	..	101
7′— 0″	6	101	...	..	107
7′— 6″	..	113	...	..	113
8′— 0″	..	107	13	..	120
8′— 6″	..	101	25	..	126
9′— 0″	..	94	38	..	132
9′— 6″	..	88	51	..	139
10′— 0″	..	82	63	..	145
10′— 6″	..	76	75	..	151
11′— 0″	..	69	88	..	157
11′— 6″	..	63	101	..	164
12′— 0″	..	57	113	..	170
12′— 6″	..	50	126	..	176
13′— 0″	..	44	139	..	183
13′— 6″	..	38	151	..	189
14′— 0″	..	32	163	..	195
14′— 6″	..	25	176	..	201
15′— 0″	..	19	189	..	208
15′— 6″	..	13	201	..	214
16′— 0″	..	6	214	..	220
16′— 6″	..	...	226	..	226
17′— 0″	..	...	226	7	233
17′— 6″	..	...	226	13	239

*Applies also to 9×6¾×3-inch Wedges and Straights.

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

(Continued on next page)

*9 x 4½ x 3-INCH WEDGE BRICK (Concluded)

Inside diameter	Number required to turn circle				
	No. 3 Wedge	No. 2 Wedge	No. 1 Wedge	Straight	Total
18′— 0″	..	...	226	19	245
18′— 6″	..	...	226	26	252
19′— 0″	..	...	226	32	258
19′— 6″	..	...	226	38	264
20′— 0″	..	...	226	45	271
20′— 6″	..	...	226	51	277
21′— 0″	..	...	226	57	283
21′— 6″	..	...	226	63	289
22′— 0″	..	...	226	70	296
22′— 6″	..	...	226	76	302
23′— 0″	..	...	226	82	308
23′— 6″	..	...	226	89	315
24′— 0″	..	...	226	95	321
24′— 6″	..	...	226	101	327
25′— 0″	..	...	226	107	333
25′— 6″	..	...	226	114	340
26′— 0″	..	...	226	120	346
26′— 6″	..	...	226	126	352
27′— 0″	..	...	226	133	359
27′— 6″	..	...	226	139	365

*Applies also to 9×6¾×3-inch Wedges and Straights.

*9 x 4½ x 2½-INCH KEY BRICK

Inside diameter	Number required to turn circle					
	No. 4 Key	No. 3 Key	No. 2 Key	No. 1 Key	Straight	Total
1′— 6″	26	..	..	..	..	26
2′— 0″	17	13	..	..	..	30
2′— 6″	9	25	..	..	..	34
3′— 0″	..	38	..	..	..	38
3′— 6″	..	29	13	..	..	42
4′— 0″	..	21	25	..	..	46
4′— 6″	..	13	38	..	..	51
5′— 0″	..	4	51	..	..	55
5′— 3″	..	..	57	..	..	57
5′— 6″	..	..	55	4	..	59
6′— 0″	..	..	50	13	..	63
6′— 6″	..	..	46	21	..	67
7′— 0″	..	..	42	30	..	72
7′— 6″	..	..	38	38	..	76
8′— 0″	..	..	34	46	..	80
8′— 6″	..	..	29	55	..	84
9′— 0″	..	..	25	63	..	88
9′— 6″	..	..	21	72	..	93

*Applies also to 9×4½×3-inch Key brick.

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

(Continued on next page)

*9 x 4½ x 2½-INCH KEY BRICK (Concluded)

Inside diameter	Number required to turn circle					
	No. 4 Key	No. 3 Key	No. 2 Key	No. 1 Key	Straight	Total
10′— 0″	..	..	17	80	...	97
10′— 6″	..	..	13	88	...	101
11′— 0″	..	..	9	96	...	105
11′— 6″	..	..	4	105	...	109
12′— 0″	..	..	..	113	...	113
12′— 6″	..	..	..	113	5	118
13′— 0″	..	..	..	113	9	122
13′— 6″	..	..	..	113	13	126
14′— 0″	..	..	..	113	17	130
14′— 6″	..	..	..	113	21	134
15′— 0″	..	..	..	113	26	139
15′— 6″	..	..	..	113	30	143
16′— 0″	..	..	..	113	34	147
16′— 6″	..	..	..	113	38	151
17′— 0″	..	..	..	113	42	155
17′— 6″	..	..	..	113	47	160
18′— 0″	..	..	..	113	51	164
18′— 6″	..	..	..	113	55	168
19′— 0″	..	..	..	113	59	172
19′— 6″	..	..	..	113	63	176
20′— 0″	..	..	..	113	68	181
20′— 6″	..	..	..	113	72	185
21′— 0″	..	..	..	113	76	189
21′— 6″	..	..	..	113	80	193
22′— 0″	..	..	..	113	84	197
22′— 6″	..	..	..	113	88	201
23′— 0″	..	..	..	113	93	206
23′— 6″	..	..	..	113	97	210
24′— 0″	..	..	..	113	101	214
24′— 6″	..	..	..	113	105	218
25′— 0″	..	..	..	113	109	222
25′— 6″	..	..	..	113	114	227
26′— 0″	..	..	..	113	118	231
26′— 6″	..	..	..	113	122	235
27′— 0″	..	..	..	113	126	239
27′— 6″	..	..	..	113	130	243
28′— 0″	..	..	..	113	135	248
28′— 6″	..	..	..	113	139	252
29′— 0″	..	..	..	113	143	256
29′— 6″	..	..	..	113	147	260
30′— 0″	..	..	..	113	151	264
30′— 6″	..	..	..	113	155	268
31′— 0″	..	..	..	113	160	273
31′— 6″	..	..	..	113	164	277
32′— 0″	..	..	..	113	168	281
32′— 6″	..	..	..	113	172	285
33′— 0″	..	..	..	113	176	289
33′— 6″	..	..	..	113	181	294
34′— 0″	..	..	..	113	185	298
34′— 6″	..	..	..	113	189	302
35′— 0″	..	..	..	113	193	306

*Applies also to 9×4½×3-inch Key brick.

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

*9 x 6 x 3-INCH KEY BRICK

Inside diameter	Number required to turn circle			
	No. 2 Key	No. 1 Key	Straight	Total
6′— 0″	48	..	..	48
6′— 6″	45	6	..	51
7′— 0″	41	13	..	54
7′— 6″	38	19	..	57
8′— 0″	34	26	..	60
8′— 6″	31	32	..	63
9′— 0″	27	39	..	66
9′— 6″	24	46	..	70
10′— 0″	21	52	..	73
10′— 6″	17	59	..	76
11′— 0″	13	66	..	79
11′— 6″	10	72	..	82
12′— 0″	6	79	..	85
12′— 6″	3	85	..	88
13′— 0″	..	91	..	91
13′— 6″	..	91	4	95
14′— 0″	..	91	7	98
14′— 6″	..	91	10	101
15′— 0″	..	91	13	104
15′— 6″	..	91	16	107
16′— 0″	..	91	19	110
16′— 6″	..	91	22	113
17′— 0″	..	91	26	117
17′— 6″	..	91	29	120
18′— 0″	..	91	32	123
18′— 6″	..	91	35	126
19′— 0″	..	91	38	129
19′— 6″	..	91	41	132
20′— 0″	..	91	44	135
20′— 6″	..	91	48	139
21′— 0″	..	91	51	142
21′— 6″	..	91	54	145
22′— 0″	..	91	57	148
22′— 6″	..	91	60	151
23′— 0″	..	91	63	154
23′— 6″	..	91	66	157
24′— 0″	..	91	70	161
24′— 6″	..	91	73	164
25′— 0″	..	91	76	167
25′— 6″	..	91	79	170
26′— 0″	..	91	82	173
26′— 6″	..	91	85	176
27′— 0″	..	91	88	179
27′— 6″	..	91	92	183
28′— 0″	..	91	95	186
28′— 6″	..	91	98	189
29′— 0″	..	91	101	192
29′— 6″	..	91	104	195
30′— 0″	..	91	107	198

*Applies also to 9×6×2½-inch Keys and Straights.
Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

*13½ x 6 x 3-INCH KEY BRICK

Inside diameter	Number required to turn circle			
	No. 2 Key	No. 1 Key	Straight	Total
6′— 0″	52	..	..	52
6′— 6″	48	7	..	55
7′— 0″	43	16	..	59
7′— 6″	38	24	..	62
8′— 0″	33	32	..	65
8′— 6″	28	40	..	68
9′— 0″	23	48	..	71
9′— 6″	18	56	..	74
10′— 0″	13	64	..	77
10′— 6″	8	73	..	81
11′— 0″	3	81	..	84
11′— 3″	..	85	..	85
11′— 6″	..	85	2	87
12′— 0″	..	85	5	90
12′— 6″	..	85	8	93
13′— 0″	..	85	11	96
13′— 6″	..	85	14	99
14′— 0″	..	85	18	103
14′— 6″	..	85	21	106
15′— 0″	..	85	24	109
15′— 6″	..	85	27	112
16′— 0″	..	85	30	115
16′— 6″	..	85	33	118
17′— 0″	..	85	36	121
17′— 6″	..	85	39	124
18′— 0″	..	85	43	128
18′— 6″	..	85	46	131
19′— 0″	..	85	49	134
19′— 6″	..	85	52	137
20′— 0″	..	85	55	140
20′— 6″	..	85	58	143
21′— 0″	..	85	61	146
21′— 6″	..	85	65	150
22′— 0″	..	85	68	153
22′— 6″	..	85	71	156
23′— 0″	..	85	74	159
23′— 6″	..	85	77	162
24′— 0″	..	85	80	165
24′— 6″	..	85	83	168
25′— 0″	..	85	87	172
25′— 6″	..	85	90	175
26′— 0″	..	85	93	178
26′— 6″	..	85	96	181
27′— 0″	..	85	99	184
27′— 6″	..	85	102	187
28′— 0″	..	85	105	190
28′— 6″	..	85	109	194
29′— 0″	..	85	112	197
29′— 6″	..	85	115	200

*Applies also to 13½X6X2½-inch Keys and Straights.

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

(Continued on next page)

*13½ x 6 x 3-INCH KEY BRICK (Concluded)

Inside diameter	Number required to turn circle			
	No. 2 Key	No. 1 Key	Straight	Total
30′— 0″	..	85	118	203
30′— 6″	..	85	121	206
31′— 0″	..	85	124	209
31′— 6″	..	85	127	212
32′— 0″	..	85	131	216
32′— 6″	..	85	134	219
33′— 0″	..	85	137	222
33′— 6″	..	85	140	225
34′— 0″	..	85	143	228
34′— 6″	..	85	146	231
35′— 0″	..	85	149	234

*Applies also to 13½×6×2½-inch Keys and Straights.

FLAT BACK ARCH BRICK

Inside diameter	Number required to turn circle			
	No. 2 F.B.A.	No. 1 F.B.A.	F.B. St.	Total
1′— 4″	26	..	...	26
1′— 6″	22	5	...	27
1′— 9″	16	14	...	30
2′— 0″	11	22	...	33
2′— 3″	5	30	...	35
2′— 6″	..	38	...	38
3′— 0″	..	38	8	46
3′— 6″	..	38	15	53
4′— 0″	..	38	23	61
4′— 6″	..	38	30	68
5′— 0″	..	38	38	76
5′— 6″	..	38	45	83
6′— 0″	..	38	53	91
6′— 6″	..	38	60	98
7′— 0″	..	38	68	106
7′— 6″	..	38	75	113
8′— 0″	..	38	83	121
8′— 6″	..	38	91	129
9′— 0″	..	38	98	136
9′— 6″	..	38	106	144
10′— 0″	..	38	113	151
10′— 6″	..	38	121	159
11′— 0″	..	38	128	166
11′— 6″	..	38	136	174
12′— 0″	..	38	143	181
12′— 6″	..	38	151	189
13′— 0″	..	38	158	196

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

12 x 6 x 3-INCH WEDGE BRICK

Inside diameter	Number required to turn circle				
	No. 3 Wedge	No. 2 Wedge	No. 1 Wedge	Straight	Total
4′— 0″	76	...	...	..	76
4′— 6″	69	13	...	..	82
5′— 0″	63	25	...	..	88
5′— 6″	57	38	...	..	95
6′— 0″	51	50	...	..	101
6′— 6″	44	63	...	..	107
7′— 0″	38	75	...	..	113
7′— 6″	32	88	...	..	120
8′— 0″	25	101	...	..	126
8′— 6″	19	113	...	..	132
9′— 0″	13	126	...	..	139
9′— 6″	7	138	...	..	145
10′— 0″	..	151	...	..	151
10′— 6″	..	144	13	..	157
11′— 0″	..	139	25	..	164
11′— 6″	..	132	38	..	170
12′— 0″	..	126	50	..	176
12′— 6″	..	120	63	..	183
13′— 0″	..	113	76	..	189
13′— 6″	..	107	88	..	195
14′— 0″	..	101	100	..	201
14′— 6″	..	95	113	..	208
15′— 0″	..	88	126	..	214
15′— 6″	..	82	138	..	220
16′— 0″	..	76	151	..	227
16′— 6″	..	69	164	..	233
17′— 0″	..	63	176	..	239
17′— 6″	..	57	188	..	245
18′— 0″	..	51	201	..	252
18′— 6″	..	44	214	..	258
19′— 0″	..	38	226	..	264
19′— 6″	..	32	239	..	271
20′— 0″	..	25	252	..	277
20′— 6″	..	19	264	..	283
21′— 0″	..	13	276	..	289
21′— 6″	..	7	289	..	296
22′— 0″	..	...	302	..	302
22′— 6″	..	...	302	6	308
23′— 0″	..	...	302	13	315
23′— 6″	..	...	302	19	321
24′— 0″	..	...	302	25	327
24′— 6″	..	...	302	31	333
25′— 0″	..	...	302	38	340
25′— 6″	..	...	302	44	346
26′— 0″	..	...	302	50	352
26′— 6″	..	...	302	57	359
27′— 0″	..	...	302	63	365
27′— 6″	..	...	302	69	371
28′— 0″	..	...	302	75	377

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

13½ x 6 x 3-INCH WEDGE BRICK

Inside diameter	Number required to turn circle				
	No. 3 Wedge	No. 2 Wedge	No. 1 Wedge	Straight	Total
4′— 6″	85	...	...	..	85
5′— 0″	79	13	...	..	92
5′— 6″	73	25	...	..	98
6′— 0″	66	38	...	..	104
6′— 6″	60	50	...	..	110
7′— 0″	54	63	...	..	117
7′— 6″	47	76	...	..	123
8′— 0″	41	88	...	..	129
8′— 6″	35	100	...	..	135
9′— 0″	29	113	...	..	142
9′— 6″	22	126	...	..	148
10′— 0″	16	138	...	..	154
10′— 6″	10	151	...	..	161
11′— 0″	3	164	...	..	167
11′— 3″	..	170	...	..	170
11′— 6″	..	167	6	..	173
12′— 0″	..	160	19	..	179
12′— 6″	..	154	32	..	186
13′— 0″	..	148	44	..	192
13′— 6″	..	141	57	..	198
14′— 0″	..	135	70	..	205
14′— 6″	..	129	82	..	211
15′— 0″	..	123	94	..	217
15′— 6″	..	116	107	..	223
16′— 0″	..	110	120	..	230
16′— 6″	..	104	132	..	236
17′— 0″	..	97	145	..	242
17′— 6″	..	92	157	..	249
18′— 0″	..	85	170	..	255
18′— 6″	..	79	182	..	261
19′— 0″	..	72	195	..	267
19′— 6″	..	66	208	..	274
20′— 0″	..	60	220	..	280
20′— 6″	..	53	233	..	286
21′— 0″	..	48	245	..	293
21′— 6″	..	41	258	..	299
22′— 0″	..	35	270	..	305
22′— 6″	..	28	283	..	311
23′— 0″	..	22	296	..	318
23′— 6″	..	16	308	..	324
24′— 0″	..	9	321	..	330
24′— 6″	..	4	333	..	337
24′— 9″	..	...	340	..	340
25′— 0″	..	...	340	3	343
25′— 6″	..	...	340	9	349

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

(Continued on next page)

13½ x 6 x 3-INCH WEDGE BRICK (Concluded)

Inside diameter	Number required to turn circle				
	No. 3 Wedge	No. 2 Wedge	No. 1 Wedge	Straight	Total
26′— 0″	..	..	340	15	355
26′— 6″	..	..	340	22	362
27′— 0″	..	..	340	28	368
27′— 6″	..	..	340	34	374
28′— 0″	..	..	340	41	381
28′— 6″	..	..	340	47	387
29′— 0″	..	..	340	53	393
29′— 6″	..	..	340	59	399
30′— 0″	..	..	340	66	406
30′— 6″	..	..	340	72	412
31′— 0″	..	..	340	78	418
31′— 6″	..	..	340	85	425
32′— 0″	..	..	340	91	431
32′— 6″	..	..	340	97	437
33′— 0″	..	..	340	103	443
33′— 6″	..	..	340	110	450
34′— 0″	..	..	340	116	456
34′— 6″	..	..	340	122	462
35′— 0″	..	..	340	128	468
35′— 6″	..	..	340	135	475
36′— 0″	..	..	340	141	481
36′— 6″	..	..	340	147	487
37′— 0″	..	..	340	154	494
37′— 6″	..	..	340	160	500
38′— 0″	..	..	340	166	506
38′— 6″	..	..	340	172	512
39′— 0″	..	..	340	179	519
39′— 6″	..	..	340	185	525
40′— 0″	..	..	340	191	531
40′— 6″	..	..	340	198	538
41′— 0″	..	..	340	204	544
41′— 6″	..	..	340	210	550
42′— 0″	..	..	340	216	556
42′— 6″	..	..	340	223	563
43′— 0″	..	..	340	229	569
43′— 6″	..	..	340	235	575
44′— 0″	..	..	340	242	582
44′— 6″	..	..	340	248	588
45′— 0″	..	..	340	254	594
45′— 6″	..	..	340	260	600
46′— 0″	..	..	340	267	607
46′— 6″	..	..	340	273	613
47′— 0″	..	..	340	279	619
47′— 6″	..	..	340	286	626
48′— 0″	..	..	340	292	632

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

9-INCH CIRCLE BRICK

Inside diameter	Number required to turn circle					
	24–33	36–45	48–57	60–69	72–81	Total
2′— 0″	12	..	..	..	..	12
2′— 3″	9	4	..	..	..	13
2′— 6″	6	8	..	..	..	14
2′— 9″	3	12	..	..	..	15
3′— 0″	..	16	..	..	..	16
3′— 3″	..	12	5	..	..	17
3′— 6″	..	8	10	..	..	18
3′— 9″	..	4	15	..	..	19
4′— 0″	..	..	20	..	..	20
4′— 3″	..	..	16	5	..	21
4′— 6″	..	..	10	12	..	22
4′— 9″	..	..	4	19	..	23
5′— 0″	..	..	..	24	..	24
5′— 3″	..	..	..	17	9	26
5′— 6″	..	..	..	12	15	27
5′— 9″	..	..	..	6	22	28
6′— 0″	..	..	..	..	29	29
	72–81	84–93	96–105	108–117	120–129	
6′— 3″	21	9	..	..	..	30
6′— 6″	14	17	..	..	..	31
6′— 9″	7	25	..	..	..	32
7′— 0″	..	33	..	..	..	33
7′— 3″	..	23	11	..	..	34
7′— 6″	..	14	21	..	..	35
7′— 9″	..	5	31	..	..	36
8′— 0″	..	..	37	..	..	37
8′— 3″	..	..	25	13	..	38
8′— 6″	..	..	18	21	..	39
8′— 9″	..	..	10	30	..	40
9′— 0″	..	..	..	41	..	41
9′— 3″	..	..	..	34	8	42
9′— 6″	..	..	..	23	20	43
9′— 9″	..	..	..	13	31	44
10′— 0″	..	..	..	..	45	45

9-INCH CUPOLA BLOCKS

Inside diameter	Number required to turn circle							
	A	B	C	D	E	F	G	H
1′— 4″	9	..	..	..	..	..	..	..
1′— 6″	6	4	..	..	..	..	..	..
1′— 9″	..	11	..	..	..	..	..	..
2′— 0″	..	6	6	..	..	..	..	..
2′— 3″	..	..	13	..	..	..	..	..
2′— 6″	..	..	..	14	..	..	..	..
3′— 0″	..	..	..	6	10	..	..	..
3′— 4″	..	..	..	..	18	..	..	..
3′— 6″	..	..	..	..	14	4	..	..
4′— 0″	..	..	..	..	5	15	..	..
4′— 3″	..	..	..	..	..	21	..	..
4′— 6″	..	..	..	..	..	14	8	..
5′— 0″	..	..	..	..	..	..	24	..
5′— 6″	..	..	..	..	..	..	12	15
6′— 0″	..	..	..	..	..	..	..	29
6′— 1″	..	..	..	..	..	..	..	29

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

6-INCH CUPOLA BLOCKS AND 6-INCH ROTARY KILN BLOCKS

Inside diameter	Number required to turn circle						
	30–42	36–48	42–54	48–60	54–66	60–72	66–78
2′— 6″	15	..	..	..	..	..	..
2′— 9″	8	8	..	..	..	..	..
3′— 0″	..	17	..	..	..	..	..
3′— 3″	..	8	10	..	..	..	..
3′— 6″	..	..	19	..	..	..	..
3′— 9″	..	..	9	11	..	..	..
4′— 0″	..	..	..	21	..	..	..
4′— 3″	..	..	..	10	12	..	..
4′— 6″	..	..	..	..	23	..	..
4′— 9″	..	..	..	..	13	11	..
5′— 0″	..	..	..	..	..	26	..
5′— 3″	..	..	..	..	..	14	13
5′— 6″	..	..	..	..	..	..	28

Inside diameter	Number required to turn circle						
	60–72	66–78	72–84	78–90	84–96	90–102	96–108
5′— 9″	..	16	13	..	..	..	..
6′— 0″	..	..	30	..	..	..	..
6′— 3″	..	..	18	13	..	..	..
6′— 6″	..	..	..	32	..	..	..
6′— 9″	..	..	..	19	14	..	..
7′— 0″	..	..	..	..	34	..	..
7′— 3″	..	..	..	..	16	19	..
7′— 6″	..	..	..	..	..	36	..
7′— 9″	..	..	..	..	..	17	20
8′— 0″	..	..	..	..	..	..	38

Inside diameter	Number required to turn circle						
	90–102	96–108	102–114	108–120	114–126	120–132	123–135
8′— 3″	..	22	17	..	..	..	..
8′— 6″	..	..	40	..	..	..	..
8′— 9″	..	..	22	19	..	..	..
9′— 0″	..	..	..	42	..	..	..
9′— 3″	..	..	..	24	19	..	..
9′— 6″	..	..	..	..	44	..	..
9′— 9″	..	..	..	..	36	9	..
10′— 0″	..	..	..	..	..	46	..
10′— 3″	..	..	..	..	..	..	48

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

9-INCH ROTARY KILN BLOCKS

Inside diameter	Number required to turn circle					
	48–66	54–72	60–78	66–84	72–90	78–96
4′— 0″	23	..	..	..	..	..
4′— 3″	11	13	..	..	..	..
4′— 6″	..	26	..	..	..	..
4′— 9″	..	14	13	..	..	..
5′— 0″	..	..	28	..	..	..
5′— 3″	..	..	15	14	..	..
5′— 6″	..	..	..	30	..	..
5′— 9″	..	..	..	12	19	..
6′— 0″	..	..	..	..	32	..
6′— 3″	..	..	..	..	14	19

Inside diameter	Number required to turn circle					
	72–90	78–96	84–102	90–108	96–114	102–120
6′— 6″	..	34	..	..	..	..
6′— 9″	..	16	19	..	..	..
7′— 0″	..	..	36	..	..	..
7′— 3″	..	..	17	20	..	..
7′— 6″	..	..	..	38	..	..
7′— 9″	..	..	..	22	17	..
8′— 0″	..	..	..	..	40	..
8′— 3″	..	..	..	..	27	14
8′— 6″	..	..	..	..	..	42

Inside diameter	Number required to turn circle					
	102–120	108–126	114–132	117–135	120–138	123–141
8′— 9″	25	18	..	..	..	..
9′— 0″	..	44	..	..	..	..
9′— 3″	..	27	18	..	..	..
9′— 6″	..	..	46	..	..	..
9′— 9″	..	..	..	48	..	..
10′— 0″	..	..	..	..	49	..
10′— 3″	..	..	..	..	..	50

Inside diameter	Number required to turn circle					
	123–141	126–144	132–150	138–156	144–162	150–168
10′— 6″	..	51	..	..	..	..
10′— 9″	..	14	38	..	..	..
11′— 0″	..	..	53	..	..	..
11′— 3″	..	..	24	30	..	..
11′— 6″	..	..	..	55	..	..
11′— 9″	..	..	..	34	22	..
12′— 0″	..	..	..	..	57	..
12′— 3″	..	..	..	..	24	34
12′— 6″	..	..	..	..	..	59

Note: Fractional parts of one tenth of a brick or more are counted as entire brick; smaller fractions are disregarded.

TABLES OF MENSURATION

To find the circumference of a circle:

Multiply the diameter by 3.1416; or for approximate purposes by $3\frac{1}{7}$.

To find diameter of a circle when the circumference is given:

Divide the circumference by 3.1416; or for approximate purposes multiply the circumference by 7 and divide by 22.

To find the area of a circle:

Multiply the square of the radius by 3.1416.

To find the area of a triangle:

Multiply the base by one-half the perpendicular height.

To find the volume of a cylinder:

Multiply the area of the section by the length.

To find the volume of a sphere:

Multiply the cube of the diameter by .5236.

To find the volume of a cone or pyramid:

Multiply the area of the base by $\frac{1}{3}$ of the height.

To find the approximate weight of a brick or special shape in pounds:

Multiply the volume in cubic inches by .075.

To find the radius of an arch, when the span and rise are given:

Square the span or chord; divide by 8 times the rise and add $\frac{1}{2}$ the rise.

$$\frac{\text{Span}^2}{8 \times \text{Rise}} + \frac{\text{Rise}}{2} = \text{Radius}$$

To find the rise of an arch, when the span and radius are given:

Square the radius, also square $\frac{1}{2}$ the span; subtract the latter from the former, take the square root of the remainder, and subtract the result from the radius.

$$\text{Radius} - \sqrt{\text{Radius}^2 - \tfrac{1}{2}\ \text{Span}^2} = \text{Rise}$$

To change degrees Centigrade to Fahrenheit:

Multiply by 9, divide by 5 and add 32.

To change degrees Fahrenheit to Centigrade:

Subtract 32, divide by 9 and multiply by 5.

TABLE FOR USE IN DESIGNING SPECIAL RADIAL TYPE BRICK

For any given diameter and any arbitrarily selected chord, the approximate number of brick required to turn the circle is

$$\frac{\pi \times \text{diameter}}{\text{chord}} = \frac{\text{circumference}}{\text{chord}}$$

The nearest whole number above or below the calculated approximate number may be chosen.

When a chord of approximately 9 inches is desired, the number can be quickly determined by reference to the third column of the table. The given diameter will usually lie between two values in the table.

In either case,

The Actual Chord = Diameter × "Sine of Half Angle"

Number of brick to circle	Sine of half angle	Diameter for 9″ chord in inches	Number of brick to circle	Sine of half angle	Diameter for 9″ chord in inches
5	.58779	15.312	26	.12054	74.664
6	.50000	18.000	27	.11609	77.526
7	.43388	20.743	28	.11197	80.379
8	.38268	23.518	29	.10812	83.241
9	.34202	26.314	30	.10453	86.100
10	.30902	29.124	31	.10117	88.959
11	.28173	31.945	32	.09802	91.818
12	.25882	34.773	33	.09506	94.677
13	.23932	37.607	34	.09227	97.540
14	.22252	40.446	35	.08964	100.402
15	.20791	43.288	36	.08716	103.258
16	.19509	46.133	37	.08481	106.120
17	.18375	48.980	38	.08258	108.985
18	.17365	51.828	39	.08047	111.843
19	.16459	54.681	40	.07846	114.708
20	.15643	57.534	41	.07655	117.570
21	.14904	60.386	42	.07473	120.434
22	.14231	63.242	43	.07299	123.305
23	.13616	66.099	44	.07134	126.156
24	.13053	68.950	45	.06976	129.014
25	.12533	71.810	46	.06825	131.868

TABLE FOR USE IN DESIGNING SPECIAL RADIAL TYPE BRICK
(Concluded)

Number of brick to circle	Sine of half angle	Diameter for 9″ chord in inches	Number of brick to circle	Sine of half angle	Diameter for 9″ chord in inches
47	.06680	134.731	74	.04244	212.064
48	.06540	137.615	75	.04188	214.900
49	.06407	140.471	76	.04132	217.812
50	.06279	143.335	77	.04079	220.642
51	.06156	146.199	78	.04027	223.491
52	.06038	149.056	79	.03975	226.415
53	.05924	151.924	80	.03926	229.241
54	.05815	154.772	81	.03878	232.078
55	.05709	157.646	82	.03830	234.987
56	.05607	160.514	83	.03784	237.844
57	.05508	163.399	84	.03739	240.706
58	.05414	166.236	85	.03695	243.572
59	.05322	169.109	86	.03652	246.440
60	.05234	171.953	87	.03610	249.307
61	.05147	174.859	88	.03569	252.171
62	.05065	177.690	89	.03529	255.030
63	.04985	180.542	90	.03490	257.880
64	.04907	183.411	91	.03452	260.718
65	.04832	186.258	92	.03414	263.620
66	.04758	189.155	93	.03377	266.509
67	.04687	192.020	94	.03341	269.380
68	.04618	194.890	95	.03306	272.232
69	.04552	197.715	96	.03272	275.061
70	.04486	200.624	97	.03238	277.949
71	.04423	203.482	98	.03205	280.811
72	.04362	206.327	99	.03173	283.643
73	.04302	209.205	100	.03141	286.533

CIRCUMFERENCES AND AREAS OF CIRCLES FROM 1/64 TO 100

Diameter	Circumference	Area	Diameter	Circumference	Area
1/64	.04909	.00019	5	15.708	19.635
1/32	.09818	.00077	5 1/8	16.101	20.629
1/16	.19635	.00307	5 1/4	16.493	21.648
1/8	.39270	.01227	5 3/8	16.886	22.691
3/16	.58905	.02761	5 1/2	17.279	23.758
1/4	.78540	.04909	5 5/8	17.672	24.850
5/16	.98175	.07670	5 3/4	18.064	25.967
3/8	1.1781	.11045	5 7/8	18.457	27.109
7/16	1.3745	.15033			
1/2	1.5708	.19635			
9/16	1.7672	.24850	6	18.850	28.274
5/8	1.9635	.30680	6 1/8	19.242	29.465
11/16	2.1598	.37122	6 1/4	19.635	30.680
3/4	2.3562	.44179	6 3/8	20.028	31.919
13/16	2.5525	.51849	6 1/2	20.420	33.183
7/8	2.7489	.60132	6 5/8	20.813	34.471
15/16	2.9452	.69029	6 3/4	21.206	35.785
			6 7/8	21.598	37.122
1	3.1416	.78540			
1 1/8	3.5343	.99402	7	21.991	38.485
1 1/4	3.9270	1.2272	7 1/8	22.384	39.871
1 3/8	4.3197	1.4849	7 1/4	22.777	41.282
1 1/2	4.7124	1.7671	7 3/8	23.169	42.718
1 5/8	5.1051	2.0739	7 1/2	23.562	44.179
1 3/4	5.4978	2.4053	7 5/8	23.955	45.664
1 7/8	5.8905	2.7612	7 3/4	24.347	47.173
			7 7/8	24.740	48.707
2	6.2832	3.1416			
2 1/8	6.6759	3.5466	8	25.133	50.265
2 1/4	7.0686	3.9761	8 1/8	25.525	51.849
2 3/8	7.4613	4.4301	8 1/4	25.918	53.456
2 1/2	7.8540	4.9087	8 3/8	26.311	55.088
2 5/8	8.2467	5.4119	8 1/2	26.704	56.745
2 3/4	8.6394	5.9396	8 5/8	27.096	58.426
2 7/8	9.0321	6.4918	8 3/4	27.489	60.132
			8 7/8	27.882	61.862
3	9.4248	7.0686			
3 1/8	9.8175	7.6699	9	28.274	63.617
3 1/4	10.210	8.2958	9 1/8	28.667	65.397
3 3/8	10.603	8.9462	9 1/4	29.060	67.201
3 1/2	10.996	9.6211	9 3/8	29.452	69.029
3 5/8	11.388	10.321	9 1/2	29.845	70.882
3 3/4	11.781	11.045	9 5/8	30.238	72.760
3 7/8	12.174	11.793	9 3/4	30.631	74.662
			9 7/8	31.023	76.589
4	12.566	12.566	10	31.416	78.540
4 1/8	12.959	13.364	10 1/8	31.809	80.516
4 1/4	13.352	14.186	10 1/4	32.201	82.516
4 3/8	13.745	15.033	10 3/8	32.594	84.541
4 1/2	14.137	15.904	10 1/2	32.987	86.590
4 5/8	14.530	16.800	10 5/8	33.379	88.664
4 3/4	14.923	17.721	10 3/4	33.772	90.763
4 7/8	15.315	18.665	10 7/8	34.165	92.886

CIRCUMFERENCES AND AREAS OF CIRCLES (Continued)

Diameter	Circumference	Area	Diameter	Circumference	Area
11	34.558	95.033	17	53.407	226.98
11 1/8	34.950	97.205	17 1/8	53.800	230.33
11 1/4	35.343	99.402	17 1/4	54.193	233.71
11 3/8	35.736	101.62	17 3/8	54.585	237.10
11 1/2	36.128	103.87	17 1/2	54.978	240.53
11 5/8	36.521	106.14	17 5/8	55.371	243.98
11 3/4	36.914	108.43	17 3/4	55.763	247.45
11 7/8	37.306	110.75	17 7/8	56.156	250.95
12	37.699	113.10	18	56.549	254.47
12 1/8	38.092	115.47	18 1/8	56.941	258.02
12 1/4	38.485	117.86	18 1/4	57.334	261.59
12 3/8	38.877	120.28	18 3/8	57.727	265.18
12 1/2	39.270	122.72	18 1/2	58.120	268.80
12 5/8	39.663	125.19	18 5/8	58.512	272.45
12 3/4	40.055	127.68	18 3/4	58.905	276.12
12 7/8	40.448	130.19	18 7/8	59.298	279.81
13	40.841	132.73	19	59.690	283.53
13 1/8	41.233	135.30	19 1/8	60.083	287.27
13 1/4	41.626	137.89	19 1/4	60.476	291.04
13 3/8	42.019	140.50	19 3/8	60.868	294.83
13 1/2	42.412	143.14	19 1/2	61.261	298.65
13 5/8	42.804	145.80	19 5/8	61.654	302.49
13 3/4	43.197	148.49	19 3/4	62.047	306.35
13 7/8	43.590	151.20	19 7/8	62.439	310.24
14	43.982	153.94	20	62.832	314.16
14 1/8	44.375	156.70	20 1/8	63.225	318.10
14 1/4	44.768	159.48	20 1/4	63.617	322.06
14 3/8	45.160	162.30	20 3/8	64.010	326.05
14 1/2	45.553	165.13	20 1/2	64.403	330.06
14 5/8	45.946	167.99	20 5/8	64.795	334.10
14 3/4	46.339	170.87	20 3/4	65.188	338.16
14 7/8	46.731	173.78	20 7/8	65.581	342.25
15	47.124	176.71	21	65.973	346.36
15 1/8	47.517	179.67	21 1/8	66.366	350.50
15 1/4	47.909	182.65	21 1/4	66.759	354.66
15 3/8	48.302	185.66	21 3/8	67.152	358.84
15 1/2	48.695	188.69	21 1/2	67.544	363.05
15 5/8	49.087	191.75	21 5/8	67.937	367.28
15 3/4	49.480	194.83	21 3/4	68.330	371.54
15 7/8	49.873	197.93	21 7/8	68.722	375.83
16	50.266	201.06	22	69.115	380.13
16 1/8	50.658	204.22	22 1/8	69.508	384.46
16 1/4	51.051	207 39	22 1/4	69.900	388.82
16 3/8	51.444	210.60	22 3/8	70.293	393.20
16 1/2	51.836	213.82	22 1/2	70.686	397.61
16 5/8	52.229	217.08	22 5/8	71.079	402.04
16 3/4	52.622	220.35	22 3/4	71.471	406.49
16 7/8	53.014	223.65	22 7/8	71.864	410.97

CIRCUMFERENCES AND AREAS OF CIRCLES (Continued)

Diameter	Circumference	Area	Diameter	Circumference	Area
23	72.257	415.48	29	91.106	660.52
23 1/8	72.649	420.00	29 1/8	91.499	666.23
23 1/4	73.042	424.56	29 1/4	91.892	671.96
23 3/8	73.435	429.13	29 3/8	92.284	677.71
23 1/2	73.827	433.74	29 1/2	92.677	683.49
23 5/8	74.220	438.36	29 5/8	93.070	689.30
23 3/4	74.613	443.01	29 3/4	93.462	695.13
23 7/8	75.006	447.69	29 7/8	93.855	700.98
24	75.398	452.39	30	94.248	706.86
24 1/8	75.791	457.11	30 1/8	94.641	712.76
24 1/4	76.184	461.86	30 1/4	95.033	718.69
24 3/8	76.578	466.64	30 3/8	95.426	724.64
24 1/2	76.969	471.44	30 1/2	95.819	730.62
24 5/8	77.362	476.26	30 5/8	96.211	736.62
24 3/4	77.754	481.11	30 3/4	96.604	742.64
24 7/8	78.147	485.98	30 7/8	96.997	748.69
25	78.540	490.87	31	97.389	754.77
25 1/8	78.933	495.79	31 1/8	97.782	760.87
25 1/4	79.325	500.74	31 1/4	98.175	766.99
25 3/8	79.718	505.71	31 3/8	98.568	773.14
25 1/2	80.111	510.71	31 1/2	98.960	779.31
25 5/8	80.503	515.72	31 5/8	99.353	785.51
25 3/4	80.896	520.77	31 3/4	99.746	791.73
25 7/8	81.289	525.84	31 7/8	100.14	797.98
26	81.681	530.93	32	100.53	804.25
26 1/8	82.074	536.05	32 1/8	100.92	810.54
26 1/4	82.467	541.19	32 1/4	101.32	816.86
26 3/8	82.860	546.35	32 3/8	101.71	823.21
26 1/2	83.252	551.55	32 1/2	102.10	829.58
26 5/8	83.645	556.76	32 5/8	102.49	835.97
26 3/4	84.038	562.00	32 3/4	102.89	842.39
26 7/8	84.430	567.27	32 7/8	103.28	848.83
27	84.823	572.56	33	103.67	855.30
27 1/8	85.216	577.87	33 1/8	104.07	861.79
27 1/4	85.608	583.21	33 1/4	104.46	868.31
27 3/8	86.001	588.57	33 3/8	104.85	874.85
27 1/2	86.394	593.96	33 1/2	105.24	881.41
27 5/8	86.787	599.37	33 5/8	105.64	888.00
27 3/4	87.179	604.81	33 3/4	106.03	894.62
27 7/8	87.572	610.27	33 7/8	106.42	901.26
28	87.965	615.75	34	106.81	907.92
28 1/8	88.357	621.26	34 1/8	107.21	914.61
28 1/4	88.750	626.80	34 1/4	107.60	921.32
28 3/8	89.143	632.36	34 3/8	107.99	928.06
28 1/2	89.535	637.94	34 1/2	108.39	934.82
28 5/8	89.928	643.55	34 5/8	108.78	941.61
28 3/4	90.321	649.18	34 3/4	109.17	948.42
28 7/8	90.714	654.84	34 7/8	109.56	955.25

CIRCUMFERENCES AND AREAS OF CIRCLES (Continued)

Diameter	Circumference	Area	Diameter	Circumference	Area
35	109.96	962.11	41	128.81	1320.3
35 1/8	110.35	969.00	41 1/8	129.20	1328.3
35 1/4	110.74	975.91	41 1/4	129.59	1336.4
35 3/8	111.13	982.84	41 3/8	129.98	1344.5
35 1/2	111.53	989.80	41 1/2	130.38	1352.7
35 5/8	111.92	996.78	41 5/8	130.77	1360.8
35 3/4	112.31	1003.8	41 3/4	131.16	1369.0
35 7/8	112.71	1010.8	41 7/8	131.55	1377.2
36	113.10	1017.9	42	131.95	1385.4
36 1/8	113.49	1025.0	42 1/8	132.34	1393.7
36 1/4	113.88	1032.1	42 1/4	132.73	1402.0
36 3/8	114.28	1039.2	42 3/8	133.13	1410.3
36 1/2	114.67	1046.3	42 1/2	133.52	1418.6
36 5/8	115.06	1053.5	42 5/8	133.91	1427.0
36 3/4	115.45	1060.7	42 3/4	134.30	1435.4
36 7/8	115.85	1068.0	42 7/8	134.70	1443.8
37	116.24	1075.2	43	135.09	1452.2
37 1/8	116.63	1082.5	43 1/8	135.48	1460.7
37 1/4	117.02	1089.8	43 1/4	135.87	1469.1
37 3/8	117.42	1097.1	43 3/8	136.27	1477.6
37 1/2	117.81	1104.5	43 1/2	136.66	1486.2
37 5/8	118.20	1111.8	43 5/8	137.05	1494.7
37 3/4	118.60	1119.2	43 3/4	137.45	1503.3
37 7/8	118.99	1126.7	43 7/8	137.84	1511.9
38	119.38	1134.1	44	138.23	1520.5
38 1/8	119.77	1141.6	44 1/8	138.62	1529.2
38 1/4	120.17	1149.1	44 1/4	139.02	1537.9
38 3/8	120.56	1156.6	44 3/8	139.41	1546.6
38 1/2	120.95	1164.2	44 1/2	139.80	1555.3
38 5/8	121.34	1171.7	44 5/8	140.19	1564.0
38 3/4	121.74	1179.3	44 3/4	140.59	1572.8
38 7/8	122.13	1186.9	44 7/8	140.98	1581.6
39	122.52	1194.6	45	141.37	1590.4
39 1/8	122.92	1202.3	45 1/8	141.76	1599.3
39 1/4	123.31	1210.0	45 1/4	142.16	1608.2
39 3/8	123.70	1217.7	45 3/8	142.55	1617.0
39 1/2	124.09	1225.4	45 1/2	142.94	1626.0
39 5/8	124.49	1233.2	45 5/8	143.34	1634.9
39 3/4	124.88	1241.0	45 3/4	143.73	1643.9
39 7/8	125.27	1248.8	45 7/8	144.12	1652.9
40	125.66	1256.6	46	144.51	1661.9
40 1/8	126.06	1264.5	46 1/8	144.91	1670.9
40 1/4	126.45	1272.4	46 1/4	145.30	1680.0
40 3/8	126.84	1280.3	46 3/8	145.69	1689.1
40 1/2	127.24	1288.2	46 1/2	146.08	1698.2
40 5/8	127.63	1296.2	46 5/8	146.48	1707.4
40 3/4	128.02	1304.2	46 3/4	146.87	1716.5
40 7/8	128.41	1312.2	46 7/8	147.26	1725.7

CIRCUMFERENCES AND AREAS OF CIRCLES (Concluded)

Diameter	Circumference	Area	Diameter	Circumference	Area
47	147.66	1734.9	61	191.64	2922.5
47⅛	148.05	1744.2	62	194.78	3019.1
47¼	148.44	1753.5	63	197.92	3117.2
47⅜	148.83	1762.7	64	201.06	3217.0
47½	149.23	1772.1	65	204.20	3318.3
47⅝	149.62	1781.4	66	207.35	3421.2
47¾	150.01	1790.8	67	210.49	3525.7
47⅞	150.40	1800.1	68	213.63	3631.7
			69	216.77	3739.3
48	150.80	1809.6	70	219.91	3848.5
48⅛	151.19	1819.0	71	223.05	3959.2
48¼	151.58	1828.5	72	226.20	4071.5
48⅜	151.98	1837.9	73	229.34	4185.4
48½	152.37	1847.5	74	232.48	4300.8
48⅝	152.76	1857.0	75	235.62	4417.9
48¾	153.15	1866.5	76	238.76	4536.5
48⅞	153.55	1876.1	77	241.90	4656.6
			78	245.04	4778.4
49	153.94	1885.7	79	248.19	4901.7
49⅛	154.33	1895.4	80	251.33	5026.5
49¼	154.72	1905.0	81	254.47	5153.0
49⅜	155.12	1914.7	82	257.61	5281.0
49½	155.51	1924.4	83	260.75	5410.6
49⅝	155.90	1934.2	84	263.89	5541.8
49¾	156.29	1943.9	85	267.04	5674.5
49⅞	156.69	1953.7	86	270.18	5808.8
			87	273.32	5944.7
50	157.08	1963.5	88	276.46	6082.1
			89	279.60	6221.1
51	160.22	2042.8	90	282.74	6361.7
52	163.36	2123.7	91	285.89	6503.9
53	166.50	2206.2	92	289.03	6647.6
54	169.65	2290.2	93	292.17	6792.9
55	172.79	2375.8	94	295.31	6939.8
56	175.93	2463.0	95	298.45	7088.2
57	179.07	2551.8	96	301.59	7238.2
58	182.21	2642.1	97	304.73	7389.8
59	185.35	2734.0	98	307.88	7543.0
60	188.50	2827.4	99	311.02	7697.7
			100	314.16	7854.0

MELTING POINTS

Metals and Alloys	Degrees Centigrade	Degrees Fahrenheit
Aluminum	658.9	1218.
Bronze (about)	1050.	1920.
Brass (about)	940.	1720.
Cast iron, gray	1230.	2250.
Cast iron, white	1150.	2100.
Copper	1083.1	1981.6
Gold	1062.6	1944.7
Iron, wrought	1510.	2750.
Lead	327.4	621.3
Nickel	1452.	2646.
Platinum	1755.	3191.
Silver	960.5	1760.9
Tin	231.9	449.3
Zinc	419.5	787.1

Minerals and Oxides	Degrees Centigrade	Degrees Fahrenheit
Alumina (Al_2O_3)	2050	3722
Chromite ($FeOCr_2O_3$)	2180	3956
Forsterite	1910	3470
Lime (CaO)	2570	4658
Magnesia (MgO)	2800	5072
Silica (cristobalite)	1713	3115

Kaolinite ($Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$) has a P.C.E. value of cone 35 corresponding to 1785°C. (3245°F.).

Mullite ($3Al_2O_3 \cdot 2SiO_2$) melts incongruently at 1810°C. (3290°F.) to form corundum and a silicious liquid. It is completely melted at 1920°C. (3488°F.).

FURNACE TEMPERATURES

	Degrees Centigrade	Degrees Fahrenheit
AIR FURNACE—		
(Malleable Iron)		
Melting chamber (maximum)	1650	3000
Base of stack, up to	1315	2400
BLAST FURNACE—		
Gray Bessemer		
Front of tuyere	1705	3100
Iron at tapping	1510	2750
BESSEMER CONVERTER		
Running steel into ladle	1640	2980
Running steel into mold	1580	2875
Soaking pit furnace, ingot in	1200	2190
GAS PRODUCER		
Combustion zone	1370	2500
Gas leaving producer	680	1250
GLASS FURNACE		
Plate glass between pots	1375	2510
Plate glass in pots, refining	1310	2390
Plate glass in pots, working	1050	1920
Tanks melted for casting	1325	2420
Annealing glassware	440 to 550	800 to 1000
OPEN HEARTH FURNACE		
Gas entering regenerator	590	1100
Gas leaving regenerator	1200	2190
Air leaving regenerator	1100	2010
Waste gases entering stack	650	1200
Refining the steel	1650	3000
Running into ladle	1580	2875

COLOR SCALE FOR TEMPERATURES

Color	Degrees Centigrade	Degrees Fahrenheit
Lowest visible red	475	875
Lowest visible red to dark red	475 to 650	875 to 1200
Dark red to cherry red	650 to 750	1200 to 1375
Cherry red to bright cherry red	750 to 825	1375 to 1500
Bright cherry red to orange	825 to 900	1500 to 1650
Orange to yellow	900 to 1090	1650 to 2000
Yellow to light yellow	1090 to 1320	2000 to 2400
Light yellow to white	1320 to 1540	2400 to 2800
White to dazzling white	1540 and over	2800 and over

TEMPERATURE END POINTS OF PYROMETRIC CONES

DEFINITION: Pyrometric Cone Equivalent (P. C. E.)—In the case of refractories, the number of that standard cone whose tip would touch the supporting plaque simultaneously with a cone of the material being investigated when tested in accordance with the Standard Method of Test for P. C. E. of Fireclay Brick (A. S. T. M. Designation C-24) of the American Society for Testing Materials.

NOTE: The terms—"fusion point," "softening point," "deformation point," and "melting point" have heretofore been loosely used for "pyrometric cone equivalent."

No. of Cone	End point*		No. of Cone	End point*	
	Degrees Cent.	Degrees Fahr.		Degrees Cent.	Degrees Fahr.
022	605	1121	7	1250	2282
021	615	1139	8	1260	2300
020	650	1202	9	1285	2345
019	660	1220	10	1305	2381
018	720	1328	11	1325	2417
017	770	1418	12	1335	2435
016	795	1463	13	1350	2462
015	805	1481	14	1400	2552
014	830	1526	15	1435	2615
013	860	1580	16	1465	2669
012	875	1607	17	1475	2687
011	905	1661	18	1490	2714
010	895	1643	19	1520	2768
09	930	1706	20	1530	2786
08	950	1742	23	1580	2876
07	990	1814	26	1595	2903
06	1015	1859	27	1605	2921
05	1040	1904	28	1615	2939
04	1060	1940	29	1640	2984
03	1115	2039	30	1650	3002
02	1125	2057	31	1680	3056
01	1145	2093	32	1700	3092
1	1160	2120	†32½	1722	3131
2	1165	2129	33	1745	3173
3	1170	2138	34	1760	3200
4	1190	2174	35	1785	3245
5	1205	2201	36	1810	3290
6	1230	2246	37	1820	3308
			38	1835	3335

*NOTE: Pyrometric cones do not give an accurate measurement of temperature. Where it is desired to interpret P. C. E. values approximately in terms of temperature, the table above may be used. This table has been approved by the A. S. T. M. It is based on the work of Fairchild and Peters. J. Amer. Cer. Soc. 9, 701-43, 1926. Heating rate 150° Cent. per hour for cones .022 to 20, inclusive, and 100° Cent. per hour for cones 23 to 38, inclusive. The temperatures do not apply to the slower rates of heating common in the commercial firing and the use of refractory materials.

†Not included in the tests of Fairchild and Peters. The temperatures given are approximate.

FURNACE TEMPERATURES

	Degrees Centigrade	Degrees Fahrenheit
AIR FURNACE—		
(Malleable Iron)		
Melting chamber (maximum)	1650	3000
Base of stack, up to	1315	2400
BLAST FURNACE—		
Gray Bessemer		
Front of tuyere	1705	3100
Iron at tapping	1510	2750
BESSEMER CONVERTER		
Running steel into ladle	1640	2980
Running steel into mold	1580	2875
Soaking pit furnace, ingot in	1200	2190
GAS PRODUCER		
Combustion zone	1370	2500
Gas leaving producer	680	1250
GLASS FURNACE		
Plate glass between pots	1375	2510
Plate glass in pots, refining	1310	2390
Plate glass in pots, working	1050	1920
Tanks melted for casting	1325	2420
Annealing glassware	440 to 550	800 to 1000
OPEN HEARTH FURNACE		
Gas entering regenerator	590	1100
Gas leaving regenerator	1200	2190
Air leaving regenerator	1100	2010
Waste gases entering stack	650	1200
Refining the steel	1650	3000
Running into ladle	1580	2875

COLOR SCALE FOR TEMPERATURES

Color	Degrees Centigrade	Degrees Fahrenheit
Lowest visible red	475	875
Lowest visible red to dark red	475 to 650	875 to 1200
Dark red to cherry red	650 to 750	1200 to 1375
Cherry red to bright cherry red	750 to 825	1375 to 1500
Bright cherry red to orange	825 to 900	1500 to 1650
Orange to yellow	900 to 1090	1650 to 2000
Yellow to light yellow	1090 to 1320	2000 to 2400
Light yellow to white	1320 to 1540	2400 to 2800
White to dazzling white	1540 and over	2800 and over

TEMPERATURE END POINTS OF PYROMETRIC CONES

DEFINITION: Pyrometric Cone Equivalent (P. C. E.)—In the case of refractories, the number of that standard cone whose tip would touch the supporting plaque simultaneously with a cone of the material being investigated when tested in accordance with the Standard Method of Test for P. C. E. of Fireclay Brick (A. S. T. M. Designation C-24) of the American Society for Testing Materials.

NOTE: The terms—"fusion point," "softening point," "deformation point," and "melting point" have heretofore been loosely used for "pyrometric cone equivalent."

No. of Cone	End point*		No. of Cone	End point*	
	Degrees Cent.	Degrees Fahr.		Degrees Cent.	Degrees Fahr.
022	605	1121	7	1250	2282
021	615	1139	8	1260	2300
020	650	1202	9	1285	2345
019	660	1220	10	1305	2381
018	720	1328	11	1325	2417
017	770	1418	12	1335	2435
016	795	1463	13	1350	2462
015	805	1481	14	1400	2552
014	830	1526	15	1435	2615
013	860	1580	16	1465	2669
012	875	1607	17	1475	2687
011	905	1661	18	1490	2714
010	895	1643	19	1520	2768
09	930	1706	20	1530	2786
08	950	1742	23	1580	2876
07	990	1814	26	1595	2903
06	1015	1859	27	1605	2921
05	1040	1904	28	1615	2939
04	1060	1940	29	1640	2984
03	1115	2039	30	1650	3002
02	1125	2057	31	1680	3056
01	1145	2093	32	1700	3092
1	1160	2120	†32½	1722	3131
2	1165	2129	33	1745	3173
3	1170	2138	34	1760	3200
4	1190	2174	35	1785	3245
5	1205	2201	36	1810	3290
6	1230	2246	37	1820	3308
			38	1835	3335

*NOTE: Pyrometric cones do not give an accurate measurement of temperature. Where it is desired to interpret P. C. E. values approximately in terms of temperature, the table above may be used. This table has been approved by the A. S. T. M. It is based on the work of Fairchild and Peters. J. Amer. Cer. Soc. 9, 701-43, 1926. Heating rate 150° Cent. per hour for cones .022 to 20, inclusive, and 100° Cent. per hour for cones 23 to 38, inclusive. The temperatures do not apply to the slower rates of heating common in the commercial firing and the use of refractory materials.

†Not included in the tests of Fairchild and Peters. The temperatures given are approximate.

TEMPERATURE CONVERSION TABLES

By Albert Sauveur

0 to 100

C.		F.	C.		F.
—17.8	**0**	32	10.0	**50**	122.0
—17.2	**1**	33.8	10.6	**51**	123.8
—16.7	**2**	35.6	11.1	**52**	125.6
—16.1	**3**	37.4	11.7	**53**	127.4
—15.6	**4**	39.2	12.2	**54**	129.2
—15.0	**5**	41.0	12.8	**55**	131.0
—14.4	**6**	42.8	13.3	**56**	132.8
—13.9	**7**	44.6	13.9	**57**	134.6
—13.3	**8**	46.4	14.4	**58**	136.4
—12.8	**9**	48.2	15.0	**59**	138.2
—12.2	**10**	50.0	15.6	**60**	140.0
—11.7	**11**	51.8	16.1	**61**	141.8
—11.1	**12**	53.6	16.7	**62**	143.6
—10.6	**13**	55.4	17.2	**63**	145.4
—10.0	**14**	57.2	17.8	**64**	147.2
— 9.44	**15**	59.0	18.3	**65**	149.0
— 8.89	**16**	60.8	18.9	**66**	150.8
— 8.33	**17**	62.6	19.4	**67**	152.6
— 7.78	**18**	64.4	20.0	**68**	154.4
— 7.22	**19**	66.2	20.6	**69**	156.2
— 6.67	**20**	68.0	21.1	**70**	158.0
— 6.11	**21**	69.8	21.7	**71**	159.8
— 5.56	**22**	71.6	22.2	**72**	161.6
— 5.00	**23**	73.4	22.8	**73**	163.4
— 4.44	**24**	75.2	23.3	**74**	165.2
— 3.89	**25**	77.0	23.9	**75**	167.0
— 3.33	**26**	78.8	24.4	**76**	168.8
— 2.78	**27**	80.6	25.0	**77**	170.6
— 2.22	**28**	82.4	25.6	**78**	172.4
— 1.67	**29**	84.2	26.1	**79**	174.2
— 1.11	**30**	86.0	26.7	**80**	176.0
— 0.56	**31**	87.8	27.2	**81**	177.8
0	**32**	89.6	27.8	**82**	179.6
0.56	**33**	91.4	28.3	**83**	181.4
1.11	**34**	93.2	28.9	**84**	183.2
1.67	**35**	95.0	29.4	**85**	185.0
2.22	**36**	96.8	30.0	**86**	186.8
2.78	**37**	98.6	30.6	**87**	188.6
3.33	**38**	100.4	31.1	**88**	190.4
3.89	**39**	102.2	31.7	**89**	192.2
4.44	**40**	104.0	32.2	**90**	194.0
5.00	**41**	105.8	32.8	**91**	195.8
5.56	**42**	107.6	33.3	**92**	197.6
6.11	**43**	109.4	33.9	**93**	199.4
6.67	**44**	111.2	34.4	**94**	201.2
7.22	**45**	113.0	35.0	**95**	203.0
7.78	**46**	114.8	35.6	**96**	204.8
8.33	**47**	116.6	36.1	**97**	206.6
8.89	**48**	118.4	36.7	**98**	208.4
9.44	**49**	120.2	37.2	**99**	210.2
			37.8	**100**	212.0

INTERPOLATION FACTORS

C.		F.	C.		F.
0.50	**1**	1.8	3.33	**6**	10.8
1.11	**2**	3.6	3.89	**7**	12.6
1.67	**3**	5.4	4.44	**8**	14.4
2.22	**4**	7.2	5.00	**9**	16.2
2.78	**5**	9.0	5.56	**10**	18.0

Note: The numbers in bold face type refer to the temperature either in degrees Centigrade or Fahrenheit which it is desired to convert into the other scale.

TEMPERATURE CONVERSION TABLES
(Continued)

100 to 1000

C.		F.	C.		F.
38	**100**	212	260	**500**	932
43	**110**	230	266	**510**	950
49	**120**	248	271	**520**	968
54	**130**	266	277	**530**	986
60	**140**	284	282	**540**	1004
66	**150**	302	288	**550**	1022
71	**160**	320	293	**560**	1040
77	**170**	338	299	**570**	1058
82	**180**	356	304	**580**	1076
88	**190**	374	310	**590**	1094
93	**200**	392	316	**600**	1112
99	**210**	410	321	**610**	1130
100	**212**	413	327	**620**	1148
104	**220**	428	332	**630**	1166
110	**230**	446	338	**640**	1184
116	**240**	464	343	**650**	1202
121	**250**	482	349	**660**	1220
127	**260**	500	354	**670**	1238
132	**270**	518	360	**680**	1256
138	**280**	536	366	**690**	1274
143	**290**	554	371	**700**	1292
149	**300**	572	377	**710**	1310
154	**310**	590	382	**720**	1328
160	**320**	608	388	**730**	1346
166	**330**	626	393	**740**	1364
171	**340**	644	399	**750**	1382
177	**350**	662	404	**760**	1400
182	**360**	680	410	**770**	1418
188	**370**	698	416	**780**	1436
193	**380**	716	421	**790**	1454
199	**390**	734	427	**800**	1472
204	**400**	752	432	**810**	1490
210	**410**	770	438	**820**	1508
216	**420**	788	443	**830**	1526
221	**430**	806	449	**840**	1544
227	**440**	824	454	**850**	1562
232	**450**	842	460	**860**	1580
238	**460**	860	466	**870**	1598
243	**470**	878	471	**880**	1616
249	**480**	896	477	**890**	1634
254	**490**	914	482	**900**	1652
			488	**910**	1670
			493	**920**	1688
			499	**930**	1706
			504	**940**	1724
			510	**950**	1742
			516	**960**	1760
			521	**970**	1778
			527	**980**	1796
			532	**990**	1814
			538	**1000**	1832

INTERPOLATION FACTORS

C.		F.	C.		F.
0.56	**1**	1.8	3.33	**6**	10.8
1.11	**2**	3.6	3.89	**7**	12.6
1.67	**3**	5.4	4.44	**8**	14.4
2.22	**4**	7.2	5.00	**9**	16.2
2.78	**5**	9.0	5.56	**10**	18.0

Note: The numbers in bold face type refer to the temperature either in degrees Centigrade or Fahrenheit which it is desired to convert into the other scale.

TEMPERATURE CONVERSION TABLES
(Continued)

1000 to 2000

C.		F.	C.		F.
538	**1000**	1832	816	**1500**	2732
543	**1010**	1850	821	**1510**	2750
549	**1020**	1868	827	**1520**	2768
554	**1030**	1886	832	**1530**	2786
560	**1040**	1904	838	**1540**	2804
566	**1050**	1922	843	**1550**	2822
571	**1060**	1940	849	**1560**	2840
577	**1070**	1958	854	**1570**	2858
582	**1080**	1976	860	**1580**	2876
588	**1090**	1994	866	**1590**	2894
593	**1100**	2012	871	**1600**	2912
599	**1110**	2030	877	**1610**	2930
604	**1120**	2048	882	**1620**	2948
610	**1130**	2066	888	**1630**	2966
616	**1140**	2084	893	**1640**	2984
621	**1150**	2102	899	**1650**	3002
627	**1160**	2120	904	**1660**	3020
632	**1170**	2138	910	**1670**	3038
638	**1180**	2156	916	**1680**	3056
643	**1190**	2174	921	**1690**	3074
649	**1200**	2192	927	**1700**	3092
654	**1210**	2210	932	**1710**	3110
660	**1220**	2228	938	**1720**	3128
666	**1230**	2246	943	**1730**	3146
671	**1240**	2264	949	**1740**	3164
677	**1250**	2282	954	**1750**	3182
682	**1260**	2300	960	**1760**	3200
688	**1270**	2318	966	**1770**	3218
693	**1280**	2336	971	**1780**	3236
699	**1290**	2354	977	**1790**	3254
704	**1300**	2372	982	**1800**	3272
710	**1310**	2390	988	**1810**	3290
716	**1320**	2408	993	**1820**	3308
721	**1330**	2426	999	**1830**	3326
727	**1340**	2444	1004	**1840**	3344
732	**1350**	2462	1010	**1850**	3362
738	**1360**	2480	1016	**1860**	3380
743	**1370**	2498	1021	**1870**	3398
749	**1380**	2516	1027	**1880**	3416
754	**1390**	2534	1032	**1890**	3434
760	**1400**	2552	1038	**1900**	3452
766	**1410**	2570	1043	**1910**	3470
771	**1420**	2588	1049	**1920**	3488
777	**1430**	2606	1054	**1930**	3506
782	**1440**	2624	1060	**1940**	3524
788	**1450**	2642	1066	**1950**	3542
793	**1460**	2660	1071	**1960**	3560
799	**1470**	2678	1077	**1970**	3578
804	**1480**	2696	1082	**1980**	3596
810	**1490**	2714	1088	**1990**	3614
			1093	**2000**	3632

INTERPOLATION FACTORS

C.		F.	C.		F.
0.56	**1**	1.8	3.33	**6**	10.8
1.11	**2**	3.6	3.89	**7**	12.6
1.67	**3**	5.4	4.44	**8**	14.4
2.22	**4**	7.2	5.00	**9**	16.2
2.78	**5**	9.0	5.56	**10**	18.0

Note: The numbers in bold face type refer to the temperature either in degrees Centigrade or Fahrenheit which it is desired to convert into the other scale.

TEMPERATURE CONVERSION TABLES
(Concluded)

2000 to 3000

C.		F.	C.		F.
1093	**2000**	3632	1371	**2500**	4532
1099	**2010**	3650	1377	**2510**	4550
1104	**2020**	3668	1382	**2520**	4568
1110	**2030**	3686	1388	**2530**	4586
1116	**2040**	3704	1393	**2540**	4604
1121	**2050**	3722	1399	**2550**	4622
1127	**2060**	3740	1404	**2560**	4640
1132	**2070**	3758	1410	**2570**	4658
1138	**2080**	3776	1416	**2580**	4676
1143	**2090**	3794	1421	**2590**	4694
1149	**2100**	3812	1427	**2600**	4712
1154	**2110**	3830	1432	**2610**	4730
1160	**2120**	3848	1438	**2620**	4748
1166	**2130**	3866	1443	**2630**	4766
1171	**2140**	3884	1449	**2640**	4784
1177	**2150**	3902	1454	**2650**	4802
1182	**2160**	3920	1460	**2660**	4820
1188	**2170**	3938	1466	**2670**	4838
1193	**2180**	3956	1471	**2680**	4856
1199	**2190**	3974	1477	**2690**	4874
1204	**2200**	3992	1482	**2700**	4892
1210	**2210**	4010	1488	**2710**	4910
1216	**2220**	4028	1493	**2720**	4928
1221	**2230**	4046	1499	**2730**	4946
1227	**2240**	4064	1504	**2740**	4964
1232	**2250**	4082	1510	**2750**	4982
1238	**2260**	4100	1516	**2760**	5000
1243	**2270**	4118	1521	**2770**	5018
1249	**2280**	4136	1527	**2780**	5036
1254	**2290**	4154	1532	**2790**	5054
1260	**2300**	4172	1538	**2800**	5072
1266	**2310**	4190	1543	**2810**	5090
1271	**2320**	4208	1549	**2820**	5108
1277	**2330**	4226	1554	**2830**	5126
1282	**2340**	4244	1560	**2840**	5144
1288	**2350**	4262	1566	**2850**	5162
1293	**2360**	4280	1571	**2860**	5180
1299	**2370**	4298	1577	**2870**	5198
1304	**2380**	4316	1582	**2880**	5216
1310	**2390**	4334	1588	**2890**	5234
1316	**2400**	4352	1593	**2900**	5252
1321	**2410**	4370	1599	**2910**	5270
1327	**2420**	4388	1604	**2920**	5288
1332	**2430**	4406	1610	**2930**	5306
1338	**2440**	4424	1616	**2940**	5324
1343	**2450**	4442	1621	**2950**	5342
1349	**2460**	4460	1627	**2960**	5360
1354	**2470**	4478	1632	**2970**	5378
1360	**2480**	4496	1638	**2980**	5396
1366	**2490**	4514	1643	**2990**	5414
			1649	**3000**	5432

INTERPOLATION FACTORS

C.		F.	C.		F.
0.56	**1**	1.8	3.33	**6**	10.8
1.11	**2**	3.6	3.89	**7**	12.6
1.67	**3**	5.4	4.44	**8**	14.4
2.22	**4**	7.2	5.00	**9**	16.2
2.78	**5**	9.0	5.56	**10**	18.0

Note: The numbers in bold face type refer to the temperature either in degrees Centigrade or Fahrenheit which it is desired to convert into the other scale.

WEIGHTS OF VARIOUS MATERIALS

Material	Average per cubic foot in pounds
BRICK	
Common	100
Fireclay	120 to 140
Silica	105
Chrome	175
Magnesia as brick or fused in furnace	170
CEMENTS	
Portland	78
Hydraulic	60
FINE GROUND CLAYS, SILICA CEMENT, ETC.	
Fire clay	85
Silica cement	75
Magnesia cement	127
Chrome cement	135
Grain magnesite (as shipped)	112
COAL AND COKE	
Anthracite	60
Bituminous	49
Charcoal	18.5
Coke	26.3
CONCRETE	
Cement, fine	137
Rubble, coarse	119
EARTH	
Loam, dry, loose	76
Loam, packed	95
Loam, soft, loose mud	108
Loam, dense mud	125
GLASS	
Common window	157
Plate	172
Flint	192
Floor or skylight	158
GRAINS	
Corn	45
Oats	24
Wheat	48
LIME	
Quick, loose lumps	53
Quick, fine	75
Stone, large rocks	168
Stone, irregular lumps	96
MASONRY	
Granite or limestone	165
Mortar, rubble	154
Dry	138
Sandstone, dressed	144
METALS	
Aluminum	166
Brass, cast	524
Bronze	534
Copper, cast	537
METALS—Continued	
Copper, rolled or wire	555
Iron, cast	450
Iron, wrought	482
Lead, cast	708
Lead, rolled	711
Steel, cast	490
Steel, rolled	495
Tin, cast	459
Zinc, cast	438
OILS	
Engine	55
Crude	48
Petroleum	55
Gasoline	43
ROCKS	
Chalk	145
Granite	165
Gypsum	143
Sandstone	144
Pumice stone	57
Quartz	165
Salt, coarse	45
Salt, fine	49
Shales	162
Slate, American	175
SAND	
Dry and loose	100
Dry and packed	110
Wet and packed	130
Gravel packed	118
WATER	
Water as ice	58.7
Water at 32 degrees Fahrenheit	62.4
Water at 212 degrees Fahrenheit	59.6
WOODS, DRY	
Apple	48
Beech	43
Birch	45
Cedar, American	35
Chestnut	41
Ebony	76
Elm	35
Hemlock	25
Hickory	53
Ironwood	114
Mahogany	35 to 53
Maple	49
Oak, live	59
Oak, white	50
Pine, white	25
Pine, yellow northern	34
Pine, yellow southern	45
Spruce	25
Black Walnut	35

CONVERSION TABLES

LENGTHS

1 millimeter (.001 meter)	.039370	inch
1 centimeter (.01 meter)	.39370	inch
1 meter	39.370	inches
1 meter	3.2809	feet
1 kilometer (1000 meter)	3280.9	feet
1 inch	25.400	millimeters
1 inch	2.5400	centimeters
1 foot	30.479	centimeters
1 foot	.30479	meter

AREAS

1 square millimeter	.0015501	square inch
1 square centimeter	.15501	square inch
1 square meter or centare	10.764	square feet
1 square inch	645.16	square millimeters
1 square inch	6.4514	square centimeters
1 square foot	929.00	square centimeters
1 square foot	.092900	square meter

VOLUMES

1 cubic centimeter (c.c.)	.06103	cubic inch
1 cubic meter	35.317	cubic feet
1 cubic inch	16.386	cubic centimeters
1 cubic foot	28317.	cubic centimeters
1 cubic foot	.028317	cubic meter

CAPACITIES

1 liter (1000 c.c.)	61.025	cubic inches
1 liter	.035315	cubic foot
1 liter	1.0567	U. S. liquid quart
1 liter	.26418	U. S. gallon
1 cubic foot	28.317	liters
1 U. S. liquid quart	.94633	liter
1 U. S. gallon	3.7853	liters
1 cubic foot	7.4805	U. S. gallons
1 U. S. liquid quart	57.750	cubic inches
1 U. S. gallon	231.00	cubic inches
1 U. S. gallon	.13368	cubic foot

WEIGHTS

1 gram	15.432	grains
1 gram	.035274	oz. avoirdupois
1 kilogram	2.2046	lb. avoirdupois
1 metric ton or 1000 kilograms	2204.6	lb. avoirdupois
1 grain	64.799	milligrams
1 ounce avoirdupois	28.350	grams
1 pound avoirdupois	453.59	grams
1 pound avoirdupois	.45359	kilogram

DECIMALS OF AN INCH FOR EACH 1/64

Common fraction	Decimal	Common fraction	Decimal
1/64	.015625	33/64	.515625
1/32	.03125	17/32	.53125
3/64	.046875	35/64	.546875
1/16	.0625	9/16	.5625
5/64	.078125	37/64	.578125
3/32	.09375	19/32	.59375
7/64	.109375	39/64	.609375
1/8	**.125**	**5/8**	**.625**
9/64	.140625	41/64	.640625
5/32	.15625	21/32	.65625
11/64	.171875	43/64	.671875
3/16	.1875	11/16	.6875
13/64	.203125	45/64	.703125
7/32	.21875	23/32	.71875
15/64	.234375	47/64	.734375
1/4	**.25**	**3/4**	**.75**
17/64	.265625	49/64	.765625
9/32	.28125	25/32	.78125
19/64	.296875	51/64	.796875
5/16	.3125	13/16	.8125
21/64	.328125	53/64	.828125
11/32	.34375	27/32	.84375
23/64	.359375	55/64	.859375
3/8	**.375**	**7/8**	**.875**
25/64	.390625	57/64	.890625
13/32	.40625	29/32	.90625
27/64	.421875	59/64	.921875
7/16	.4375	15/16	.9375
29/64	.453125	61/64	.953125
15/32	.46875	31/32	.96875
31/64	.484375	63/64	.984375
1/2	**.5**	**1**	**1.**